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ABSTRACT

A research study was conducted to measure (1) the extent to which a young woman is financially disadvantaged by the loss of her husband's income, (2) the ways in which she seeks to alleviate this loss, and (3) how successful she is in doing so. Data were collected from 519 young women, both white and black, who experienced a first disruption of their marriages (either separation or divorce) between 1969 and 1973. Findings of the study indicated that among white women whose family incomes were above poverty in the period immediately preceding divorce or separation, twenty-six percent had below-poverty family incomes in the post-disruption period. For black disruptees who were above the poverty line in the predisruption period, forty percent fell below the poverty income ceiling. Thirty-eight percent of the white disruptees and fifty-six percent of the black disruptees had failed to complete high school as compared with twenty-one percent and thirty-five percent respectively for their counterparts whose marriages were stable. (Appended material includes sections dealing with sample selectivity and those who remarry, a description of variable construction, appropriate tests for coefficient differences in labor supply functions across time, and a conceptual framework for the study.) (LRA)

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The Short-Term Effects of Marital Disruption on the Labor Supply Behavior of Young Women

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CHAPTER I

INTRODUCTION

Divorce and separation rates have been increasing, particularly in the last decade, during which divorce rates have had an annual growth rate of 6.6 percent. By 1973 the divorce rate (divorces per 1,000 married women 14 to 44 years of age) was about 33. This represents an increase of almost 100 percent from 1965 when the divorce rate was approximately 17. This rise in divorce rates has correspondingly increased (since 1960) the proportion of female heads of household who are separated or divorced rather than widowed. From 1960 to 1974 the percentage increase in families headed by a divorced female was 171.5, while for families headed by a widow the percentage increase was 7.5. This increase in female family headship is concentrated among younger women, particularly those 14 to 24 years old.[1]

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[1]Although the proportion of total households headed by a husband and wife has increased 19 percentage points from 1960 to 1974, the increase in female headed households has been 51 percent over the same time period. However, the greatest growth in the last decade and a half has been among primary individuals, both male and female (108 percent for male primary individuals and 79 percent for like females). See Heather Ross and Isabel Sawhill, Time of Transition (Washington, D.C.: The Urban Institute, 1975), pp. 189-99.

According to U.S. Census figures, about 28 percent of the women who became divorced did so between the ages of 20 and 24. The median age at divorce after first marriage was 27. See U.S. Bureau of the Census, Current Population Reports, "Number, Timing and Duration of Marriages and Divorces in the United States," P- 20, no. 297 (Washington, D.C.: U.S. Government Printing Office, 1976), p. 8.

In these young age groups the likelihood of a child under 18 being in the household is high. By 1974, 62 percent of all white and 83 percent of nonwhite female headed families had at least one child under 18. For whites, the absolute increase since 1960 in the number of female heads with children is 63 percent, while for nonwhites the corresponding increase is 127 percent.

It is evident, therefore, that marital disruption is no longer a relatively rare phenomenon but rather is an event which either affects or will affect a considerable proportion of people who are currently young adults. There is also an increasing likelihood, given the low median age at divorce, that children will be involved as the husband and wife separate. As such, there is a need for a clear definition of public policies with respect to employment, training and income assistance for the growing group of women who are becoming heads of household. However, the effective determination and implementation of any social policy requires information concerning the socioeconomic characteristics of those households in which a marital disruption takes place as well as quantitative indications of the impact of the disruption on the financial resources of the household. A principal objective of this study is to provide such information.

In order to concentrate on the age group most vulnerable to such a marital disruption, this study uses data from the National

Longitudinal Surveys of young women aged 14 to 24 in 1968.[2] These data clearly point out the extent of marital disruption among young women in the early years of marriage.[3] In 1968 there were slightly over 18 million young women in the age range of 14 to 24. By 1973, about 70 percent of these same women (aged 19 to 29) either were or had been married at least once. Of this ever-married group, an estimated 14 percent had experienced either a temporary or permanent disruption of their marriage. There is substantial variation by race in marital disruption rates. About 12 percent of ever-married white women and 30 percent of ever-married black women had a marital disruption during the five-year period.

The universe selected for this study consists of those women represented by the sample, both white and black, who experienced a first disruption of their marriage (either a first separation or divorce) between 1969 and 1973. The most unique feature of the

---

[2]The National Longitudinal Surveys sample consists of 5,159 women who were interviewed in every year between 1968 and 1973 and by telephone in 1975. The sample includes a disproportionate number of young black women, about 1500 respondents, to permit statistically meaningful, independent analysis of this group. See N.L.S. Handbook (Columbus, Ohio: Center for Human Resource Research, 1977), for a complete description of the data and collection techniques.

[3]A marital disruption is defined as a first separation or divorce, whichever comes first.

National Longitudinal Surveys (N.L.S.) data set is its longitudinal nature. Substantial data regarding labor market behavior and associated socioeconomic characteristics are gathered at several points in time for the same group of respondents. The data, therefore, allow the researcher to investigate more completely a young woman's labor supply response to her changing financial circumstances, since information is available for periods both before and after the marital breakdown occurs.

In particular, the use of the N.L.S. data base distinguishes this analysis of the effects of marital disruption on the labor market behavior of young women from previous studies in the following respects:

1. The nature of the data permits separate analyses of the labor supply behavior of separated or divorced women, rather than having to lump them with never-married women and widows.

2. The longitudinal nature of the data set permits cross-sectional analyses of the labor supply behavior both before and after the marital disruption occurs.

3. The age group, those aged 14 to 24 in 1968, embraces a large portion of the women most vulnerable to a marital disruption.

4. The sample universe includes those receiving public assistance.[4]

One caveat is the fact that the data are available only for the years 1968 to 1975. In order to assure an adequate sample size, postdisruption labor supply behavior is measured at the second survey

[4]See the discussion on variable construction in Chapter II for a description of other related studies on female heads and the different research strategies used.

after the disruption is known to have occurred. Thus the study can assess only the short-term effects of the disruption on the young woman's labor supply behavior.[5]

The nature of the N.L.S. data requires that the perspective of this study be from the female side, since only limited information is available on the spouse's characteristics. For this reason, the focus will be on the economic consequences of the breakdown of the marriage on the wife and those living with her. Clearly the husband's perspective with regard to the disruption's financial consequences would be expected to be quite different.

The remainder of this introduction will be devoted first, to a description of the specific research objectives of this study and second, to an outline of the research methodology to be followed.

Research Objectives

The short-term social and economic consequences of a marital disruption are visibly manifested in a number of ways. The most obvious economic consequence of the disruption is the change in family income levels. For this reason, the overall objective of this study

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[5] The N.L.S. older women's cohort, aged 30 to 44 in 1967, is more suited to a study of longer-run effects. For a study which uses this cohort to investigate such long-run effects of marital breakdown on family incomes and corresponding alterations in labor market behavior, see Lois Shaw, "Economic Consequences of Marital Disruption," (Columbus: The Ohio State University, Center for Human Resource Research, 1978).

is to measure the extent to which a young woman is financially disadvantaged by the loss of her husband's income, the ways in which she seeks to alleviate this loss, and how successful she is in doing so.

In order to satisfy such an objective, it is necessary that the research approach be multiphased. First, the study will attempt to link the changes in the components of the family's income to short-term alterations in the respondent's labor supply behavior when her marriage breaks down. This will be done by comparisons, both tabular and multivariate, of the responsiveness of work activity to certain socioeconomic parameters in the immediate pre- and postdisruption periods for a selected sample of disrupting women. Second, the study will seek to assess whether such comparisons in fact understate the actual labor supply response to the alteration in the respondent's financial resources as a result of the disruption. If the marital disruption is anticipated and labor market behavior is significantly altered before the event actually occurs, a comparison of the determinants of labor supply immediately before and after a marital disruption would understate the influence of that disruption. To ascertain the extent to which such anticipatory behavior occurs, comparisons will be made between the predisruption labor market behavior of disrupting women and a comparable group of women whose marriages are known to have remained intact.

A secondary objective of this study is to determine whether certain recently developed methodologies are effective in the analysis of the work behavior of women undergoing a marital breakdown. The existing literature which focuses on the labor supply of women

has with few exceptions been restricted to married women with a spouse in the household. Those studies which have examined the labor market behavior of female heads of household, particularly where public assistance recipients are included in the sample, reveal mixed results.[6] It is hoped that this study may be able to provide some answers as to whether further methodological refinements are necessary in order to be able to analyze the labor supply of such groups in the population.

Outline of the Study

Chapter II describes the research design of the study. In the first section the construction of the samples of disrupting and non-disrupting groups is discussed. The second section develops the design for the multivariate analysis, including the specification of the labor supply model to be estimated, resulting hypotheses, and a description of the dependent and independent variables.

Chapter III details the tabular and multivariate results. The first section is devoted to a comparison of the disrupting sample before and after the disruption occurs. The tabular results indicate changes in selected income characteristics and corresponding changes in certain labor supply measures over the disruption period. Multivariate results are presented in an effort to examine the importance of the economic variables in altering labor supply behavior. The

[6] See Chapter III for a detailed discussion of these results.

second section makes similar comparisons between the predisruption labor supply behavior of the group whose marriages are to break down and the behavior over the same period of time of the women whose marriages remain intact. The tabular material describes the income and work-related characteristics of the two groups. The multivariate analysis presents the results of labor supply functions for the two groups.

Chapter IV summarizes the results of the investigation, draws some implications for policy, and makes suggestions for further research.

CHAPTER II

RESEARCH DESIGN

Sample Universe

The sample of maritally disrupting women includes all women who either separate or divorce for the first time between 1968 and 1973.[1] There are 519 young women, both white and black, who can be identified as having had a first disruption during the five-year period. These women were either married as of 1968 or married at some point between the 1968 and 1973 interviews.[2] Since the precise date of separation

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[1] There are differences by race in the distribution of maritally disrupting women who are classified as having had a separation or a divorce. 17 percent of all divorcees are black, while 46 percent of all separatees are black. Divorcees and separatees do exhibit differences in labor market behavior. For a detailed description of some of these differences, see Allyson Sherman Grossman, The Labor Force Patterns of Divorced and Separated Women, Special Labor Force Report 198 (Washington, D.C.: U.S. Government Printing Office, 1977).

[2] The research methodology permits a respondent to appear only once--the first time the event occurs within the 1968 to 1973 period. Women whose marital status was "separated" or "divorced" at the time of the first interview in 1968 are excluded from the analysis since the precise date of the disruption is not known and the predisruption characteristics of the woman and her family cannot be ascertained.

There are two types of cases that prevent the criteria for inclusion in the sample of disruptees from being applied with precision. One, women who separate and return to the same husband between subsequent survey dates cannot be identified. Two, if a woman had a marital disruption before the initial interview in 1968 but was again in a "married-spouse present" status by 1968, she would not be identified as a disruptee. To the extent that such cases exist, such women would be classified as nondisrupting women.

cannot be determined for most women, the "before" and "after" status will refer to the nearest interview date before and after the disruption. "T" will reference the last interview before the disruption; "T + 1," the first interview after the disruption takes place; and "T - 1" and "T + 2," the immediately earlier and later interview dates.[3]

Depending on the point in the disruption process being analyzed, certain additional universe restrictions have been added. In analyses of predisruption labor supply, any woman not married at the relevant survey date is excluded from the sample universe at that point. In postdisruption analyses, women who have remarried are excluded from the first survey in which they report themselves as once again in a married status. Any woman who responds that she is enrolled in school is omitted from the sample universe in that year. Table 1 summarizes the effect by race of each of these restrictions on the sample sizes at each point in the disruption cycle.[4]

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[3]For example, if a woman is first separated or divorced between the 1970 and 1971 interviews, "T - 1" would be the 1969 interview; "T," the 1970 interview; "T + 1," the 1971 interview; and "T + 2," the 1972 interview. Since there was no interview conducted in 1974, the "T + 2" point for those disrupting between 1972 and 1973 was arbitrarily defined as 1975. This was done with the assumption that there is little alteration in labor supply behavior between "T + 2" and "T + 3."

[4]The generalizability of the results obtained from this study is clearly affected by the selective nature of the sample universe. See Appendix A for a complete description of the socioeconomic characteristics and labor supply behavior of those women who remarry by "T + 2."

Table 1

Sample Size Frequencies by Race from T - 1 to T + 2[a]

Universe by Race	Time			
	T - 1	T	T + 1	T + 2
Total Race				
Total Sample	519	519	519	519
Omitted Group[b]	206	70	70	190
Restricted Sample	313	449	449	329
Whites				
Total Sample	301	301	301	301
Omitted Group	99	37	47	129
Restricted Sample	192	264	254	172
Blacks				
Total Sample	218	218	218	218
Omitted Group	97	33	23	61
Restricted Sample	121	185	195	157

[a] Frequencies are unweighted.

[b] At "T - 1" and "T" the omitted groups are those future marital disruptees who are enrolled in school or who are in a "never married" status. At "T + 1," the omitted group includes those women enrolled in school or who have remarried or reconciled with their husbands by "T + 1." At "T + 2," the omitted group includes those women enrolled in school and those women who have remarried or reconciled with their husbands by "T + 1" or "T + 2."

In order to be able to compare the characteristics of individual respondents in the sample whose marriages disrupted with a comparable group of women whose marriages remained intact, it was necessary to determine a "reference group" representing "nondisrupting counterparts." This reference group was arbitrarily chosen to be a cross-section of those women married with a spouse present in 1971 whose marriages remained intact between 1968 and 1975. There were 1566 women (1278 whites and 288 blacks) who satisfied the above criteria. The point "T" for this group references the survey year, 1971.

Tabular Analysis

The tabular material presented in this study is designed to compare certain components of family income (1), among disruptees prior and subsequent to disruption (i.e., at T and T + 2) and (2), between disruptees at T and the reference group of maritally stable counterparts in 1971. In addition, the gross effects of the marital disruption on the young women's labor supply behavior (as measured by annual hours worked) are traced from T - 1 to T + 2. Finally, the predisruption labor supply of the young women is compared with that of the reference group.

Multivariate Analysis

Focuses

The multivariate portion of this study models the labor supply of the disrupting woman at two points--the last survey before the marital disruption occurs ("T") and the second survey after the disruption

occurs ("T + 2").[5] A third labor supply model is constructed for the reference group in 1971 in order to be able to compare the labor supply response of the maritally disrupting group at T to a maritally stable sample. Since white and black respondents are not assumed to have similar tastes with regard to the mix of market and nonmarket work and leisure, all multivariate models for this study are stratified by race and all comparisons are within race only.

In order to examine further the influence of the receipt of public assistance on postdisruption labor supply, the samples are then stratified by whether the respondent has completed high school. The presumption is that those women who have dropped out of high school are most likely after a break up of their marriage to be receiving public assistance, since their market wages are expected to be lower than those of their counterparts who have completed high school.[6]

A multivariate analysis at two points in the disruption cycle permits a modelling of the responsiveness of a young woman's annual hours worked to certain economic factors, holding other social and

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[5] The T + 2 survey point is chosen rather than the T + 1 point in order to assure that continuous variables, such as annual hours worked and nonwage income, are measured over a period in which the woman was in a continuously disrupted status.

[6] Robert Stein gives figures indicating that, of those women aged 16 to 44 who were heads of poor families, 67 percent had not completed high school and 28 percent had no high school education at all. See Robert Stein, "The Economic Status of Families Headed by Women." Monthly Labor Review 93 (December 1970): 8.

demographic characteristics constant. From such models, an attempt can be made to discern whether there are significant differences in the labor supply response to certain economic and control parameters between the pre- and postdisruption periods. Because the two samples are not independently distributed, being largely the same respondents measured at two points in time, the common tests for statistical differences between coefficients or between sets of coefficients are inappropriate. For the purposes of this study two alternative tests of significance are used, one, confidence interval estimation and two, t tests for differences in coefficients across time with varying assumptions regarding the size of the covariance term.[7]

The comparison of the young women whose marriages break down with a group of maritally stable women does not suffer from the same problems, since the two samples are independently distributed. Labor supply differences can therefore be examined independently of differences between the two groups in sociodemographic and economic characteristics.

Hypotheses

On the basis of the economic theory of labor supply (see Appendix E), hypotheses can be advanced regarding the impact of a marital disruption on the determinants of a young woman's labor market behavior.[8]

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[7] See Appendix C for a complete description of the problems with using conventional statistical tests and the results of the alternative tests adopted.

[8] See Appendix E for a detailed explanation of the conceptual framework for these hypotheses.

The maritally disrupted woman would be expected to have fewer financial resources after the disruption occurs. This is expected to be true despite the fact that the income reduction resulting from the loss of the spouse's earnings can be cushioned by increases in other financial resources such as child support, alimony, public assistance, and support from parents or relatives. If there is such a net income loss, ceteris paribus, one would expect the woman to substitute market work for home work, increasing the likelihood of entering the labor force for the woman who is out of the labor force and increasing the amount of time spent in the labor force for the woman who is already in it.

This hypothesized response to a change in the level of nonwage income does not represent a shift in the labor supply curve, but rather a movement along the curve. Therefore, if the young woman does not receive public assistance after the occurrence of a marital disruption, the labor supply effects of own wage and unearned income changes are expected not to be significantly different between the pre- and postdisruption periods.[9]

In the postdisruption period, wage changes for women who are receiving some form of public transfer payments such as AFDC will be associated

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[9] If, however, the possibility of complementarity is allowed between the labor supply of the husband and wife, then the size of the net wage effect in the postdisruption period is expected to be smaller than in the predisruption period, since there are fewer substitutes for the woman's market work. This result would be analagous to the results obtained by Heckman where he compares the derivatives of the labor supply equations for two types of two person households, one in which the wife performs market work and one in which she does no market work. He concludes that the husband's substitution (compensated wage) effect should be smaller for those households where the wife does not work. See Heckman, "Three Essays on the Supply of Labor and the Demand for Goods," Princeton University, 1971, pp. 3-8.

with smaller labor supply changes than existed before the disruption. This will occur because of the reduction of transfer payments that corresponds to increases in labor market earnings. The earnings associated with labor supply will be "implicitly taxed" at high rates if the woman is receiving public transfer payments. Thus the magnitude of the labor supply effects due to wage differences will depend on the size of the implicit tax rate on earnings in the respondent's area of residence. Assuming changes in unearned income are similarly taxed, the observed labor supply changes corresponding to a change in unearned income will also be smaller after the disruption of the marriage than before.

To the extent that black women have a higher probability of receiving public transfer payments as female heads of household, the hypothesized differences in the effects of incomes and wages on labor supply between the pre- and postdisruption periods will be more likely to be found among black than among white disruptees.[10]

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[10] In the above-stated hypothesis as to racial differentials in labor supply, the assumption is that blacks are more likely to be receiving public assistance than whites in the postdisruption period. There are several possible rationales for such an assumption. First, holding nonwage income levels constant across the races, blacks have lower expected wages than whites. Therefore, even working full-time, their net earnings (as compared with those of whites) would be more likely to make public assistance an attractive option. Second, holding expected wages constant, white women can be expected to have higher nonwage incomes than blacks after disruption, even though the net reduction in income between the two periods is greater for whites. This higher nonwage income may disqualify them for public assistance benefits. Third, even if both wages and nonlabor income are held constant, blacks might be expected to be more likely to receive welfare because there is less stigma attached to its receipt by them than for whites.

According to existing literature, the expectation would be that, ceteris paribus, the predisruption labor supply behavior of disrupting women and the behavior of a comparable group of women whose marriages are stable will be similar. Differentials may be created if the intensity of a woman's work activity increases the probability of a marital disruption.[11] Or alternatively, labor supply behavior will differ if the young woman acts to alter the intensity of her predisruption labor market participation in anticipation of the event's occurrence. There are no hypothesized differences in labor supply behavior by race after controlling for differences in nonwage income levels and the probability of receipt of public assistance.

The Empirical Model

As discussed in Appendix E, the empirical model examines the impact of the occurrence of a marital disruption on the relationship between certain socioeconomic factors and the amount of labor that a young woman supplies to the market. To this end, the young woman's annual hours worked before and after the disruption are regressed on her potential wage rage and her nonwage income. The ease with which the woman can obtain welfare benefits, the number of other adult members in the family, the presence of children, the duration of her marriage, her health status, whether she lives in an urban area and cyclical economic factors are included as additional variables in the model in order to be able to isolate the income and wage effects.

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[11] See Appendix E for a discussion of the concepts of "independence" and "income" effects as defined by Heather Ross and Isabel Sawhill in Time of Transition, pp. 42-47.

Variable Construction

DaVanzo, DeTray and Greenberg conclude that cross-sectional estimated labor supply parameters are highly dependent on the ways in which different researchers have constructed the wage and nonlabor income vatiables, the particular specification of the labor supply model and the choice of the sample.[12] There is a great deal of diversity among researchers in the assumptions used for estimating labor supply equations. The following issues will be discussed: first, selection of a sample population for this study; second, specification of a labor supply measure; and third, the construction of wage and nonlabor income measures and other independent variables to be included.

Sample Selection

Reviewing the labor supply literature, there appear to be two potential sources of sample selection bias applicable to this study. One is the bias engendered by selecting out a sample according to marital status, since marital status cannot be considered exogenous to labor supply. Since findings (see Appendix E) suggest the existence of a causal relationship between labor supply and marital status, it is important to be aware of the potential source of bias in the results obtained due to the marital status stratifications.

Second, several studies exclude persons receiving public assistance income because nonwage income then is endogenous and wage rates

[12] Julie DaVanzo, Dennis N. DeTray, and David H. Greenberg, "The Sensitivity of Male Labor Supply Estimates to Choice of Assumptions," The Review of Economics and Statistics 58, no. 3 (August 1976): 323.

are affected by a negative tax rate on earnings. All of these studies examine the labor supply behavior of female heads of household as one of several demographic subgroups being studied.[13] However, by excluding public assistance recipients, widows in all probability dominate the sample population in these analyses. Two alternatives have been used in recent literature to avoid the necessity of excluding such observations. One alternative is to incorporate an explanatory variable which attempts to proxy for the likelihood that a given respondent will receive public assistance.[14] A second method is to stratify the sample by wage levels, hypothesizing that women with the lowest wage level have the highest probability of the receipt of welfare benefits.[15]

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[13]See Robert E. Hall, "Wages, Income and Hours of Work," in Income Maintenance and Labor Supply, Glen Cain and Harold Watts (Eds.) (Chicago: Markham Press, 1973), pp. 102-62; R.H. Frank, "The Supply of Labor," Ph.D. dissertation, University of California, Berkeley, 1972; Michael J. Boskin, "Economics of Labor Supply," in Income Maintenance and Labor Supply, pp. 163-81.

[14]For an example of research using this technique, see Edward D. Kalachek and Frederic A. Raines, "Labor Supply of Low-Income Workers," in President's Commission on Income Maintenance Technical Studies, (Washington, D.C.: U.S. Government Printing Office, 1970), pp. 159-86. Kalachek and Raines, in addition to incorporating a variable proxying for the probability of welfare receipt, also restricted their sample to households in the C.P.S. whose total income did not exceed twice the Social Security Administration's low cost budget level.

[15]See Irv Garfinkel and Stanley Masters, The Effect of Income and Wage Rates on the Labor Supply of Prime Age Women (Madison, Wisconsin: Institute for Research on Poverty, 1974), pp. 40-55.

This study does include public assistance recipients. Accordingly two methods are used to attempt to control for the probability of the receipt of such assistance within the designated labor supply parameters. Initially, explanatory variables which proxied for the likelihood of such public assistance receipt were included as determinants of labor supply.[16] A further stratification of postdisruption models by educational level (completion/noncompletion of high school) was also tried, with the high school dropouts hypothesized to have the highest probability of the receipt of public transfer payments.

The Dependent Variable - Measuring Labor Supply

The measurement of labor supply, both conceptually and operationally, has been open to controversy in the literature. In this subsection two issues will be addressed: (1) whether it is conceptually more correct to measure labor supply as annual hours worked or as hours offered and (2) whether nonparticipants should be included in the sample universe.

As Daniel Greenberg points out, economists estimating labor supply functions have traditionally assumed that individuals are observed at an equilibrium point, thus making observed hours worked the appropriate measure of labor supply. To the extent that many individual's labor supply is measured at a point of disequilibrium, i.e., where hours offered differ from actual hours worked, this assumption

[16] See Appendix B for a detailed description of the construction of this variable.

of equilibrium is called into question. However, even if the conceptually appropriate measure is offered hours, there are significant measurement problems. Hours in unemployment is usually the only empirical measure available for the difference between hours worked and hours offered. Such a measure is probably not equivalent to the number of hours a person would like to work at a given wage rate.[17] For the purpose of this study, the assumption will be made that the respondent's annual work hours do represent a point of equilibrium with a given expected wage rate. For this reason, annual hours in unemployment will not be included in the labor supply measures.

The exclusion of observations from labor force nonparticipants can also lead to selectivity bias since, as has been mentioned, zero working hours is just a corner solution to the labor-leisure choice. The line estimated by excluding nonworkers would be less steep than the true function due to this exclusion. There is another strong reason to include nonparticipants. Since one of the purposes of this study is to assess the differential impacts of marital disruption on labor supply, the inclusion of nonworkers is necessary to determine the extent of the impact.

Particularly when measuring the predisruption labor supply behavior of disrupting women or the equivalent behavior of their continuously married counterparts, there is a significant proportion of women with

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[17] David H. Greenberg, Problems of Model Specification and Measurement: The Labor Supply Function, R-1085-EDA (Santa Monica, California: Rand Corporation, 1972), pp. 6-9.

zero annual hours of work.[18] Two alternative solutions to this dilemma are presented in the literature. One method is to measure labor supply by a continuous measure of annual hours worked with a zero assigned to nonparticipants and to employ a special statistical procedure such as Tobit analysis. A second alternative is to assume the labor supply decision is a two-stage process. First, an initial decision is made as to whether or not to participate in the labor force. Second, given the choice is made to participate, the individual then chooses the number of hours to work.[19] This study uses the former alternative.[20]

The measure of annual hours of work is constructed from the respondent's annual work history in the survey years where the information is available (1970-1973). In the survey years where such data are not available (1968, 1969, and 1975), the dependent variable is the product of the responses to the question on the weeks worked during the past year multiplied by the response as to the usual hours worked in a week.[21]

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[18]At T, 22.8 percent of white disruptees and 28.8 percent of black disruptees had zero hours of work. At T + 2, comparable figures were 16.1 percent for whites and 28.4 percent for blacks.

[19]See Boskin, "Economics of Labor Supply," and Kalachek and Raines, "Labor Supply," examples of empirical studies using the latter procedure.

[20]The Tobit results were very similar to those obtained through ordinary least squares. Because the least squares regression package offered more information and permitted the models to be run stepwise, a decision was made to use only OLS results in the text. See Appendix D for a listing of the Tobit results obtained for the predisruption labor supply models.

[21]See Appendix B for a detailed discussion of the construction of the dependent variable.

The Independent Variables

Labor supply theory suggests that, ceteris paribus, variation in wage rates and nonwage income should explain the labor supply behavior of an individual respondent. Control variables include the duration of marriage, the presence of children in the household, SMSA residence, accessibility to welfare, the number of other adult family members, health status, and a variable proxying for cyclical economic factors. In this subsection, particular attention will be given to the construction of the wage and nonwage income variables. In addition, the rationale for the choice of control variables will be discussed.

(1) Potential Wage Rate

If the sample population is to include women with no labor market experience during the relevant time period covered, a method must be found to infer a potential wage rate for such individuals, the market wage rate they could expect to receive if they worked. The procedure that is generally used in the literature is to impute such a potential wage by a two-stage procedure. First, a predicted wage rate is computed from a first-stage regression where the sample population is restricted to wage and salary workers. This resulting potential wage measure is then used for all respondents, regardless of work status, in estimating the labor supply function.

This study uses the above imputation procedure. However, certain problems with the procedure must also be discussed. There is a substantial risk that valuable information contained in the residuals of the imputing equations is being lost by this technique. Initial evidence indicates that the variance in the wage rates of the sample population is substantially reduced when an imputed rather than an

actual wage rate measure is used.[22] Additionally, by using such an imputation technique, the assumption is made implicitly that if a nonworking woman had the same characteristics (included in the imputing wage equation) as the working woman, she would obtain the same wage.[23] Finally, because many of the determinants of the wage rate may independently affect labor supply, there can be severe multicollinearity if these wage determinants are also entered directly into the labor supply model. If these determinants are excluded from the labor supply equation, the possibility of omitted variable bias exists.[24]

For the purposes of this study, actual hourly earnings are hypothesized to be a function of the respondent's education, SMSA/nonSMSA residence, South/nonSouth residence and her self-reported

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[22] DaVanzo, DeTray and Greenberg find that, at least with a selected sample of prime-age males, switching from an observed to an imputed wage variable (with a dependent variable of annual hours) results in a smaller negative coefficient. Also, when an imputed wage variable is used, the net worth coefficient changes from positive and significant to negative and insignificant. See DaVanzo, DeTray, and Greenberg, "Sensitivity of Male Labor Supply Estimates," pp. 316-319.

[23] Heckman offers an alternative procedure that simultaneously estimates an offered wage function and asking wage function. See James J. Heckman, "Shadow Prices, Market Wages and Labor Supply," Econometrica 42, no. 4 (July 1974), pp. 679-94, for a critique of the instrumental technique.

[24] See Keeley, "Economics of Labor Supply," pp. IV-14-18 for a complete review of problems incurred by various wage estimation techniques. Keeley mentions the additional problem of the endogeneity of the wage rate due to the effect of taxes. Keeley notes that failure to account for taxes may lead to large biases in labor supply parameters because some of the variation in marginal net wages may be in fact due to variation in marginal tax rates.

health status. From these estimates, an expected wage standardized in 1967 dollars is constructed for all respondents, whether or not they are currently in the labor force.[25] Since this study is comparing labor supply parameter estimates across time for the same group of women, there is no reason to purge the wage of any "temporal" component which may exist.[26]

Assuming that the positive substitution effect dominates the negative income effect of the women's own wage, the expected wage coefficients will be positive across all models. If no public assistance is received after the disruption occurs, wage effects should not alter significantly over the period of the disruption. If marital disruption increases the likelihood of receiving public assistance, and if black disruptees are more likely than whites to receive such assistance, the expectation is that the size of the substitution effects will be reduced from T to T + 2 for the disrupting group, with the reductions being greatest for the black disruptees. Substitution effects should be similar, on the other hand, between continuously married women and the disrupting women in the predisruption period.

(2) Nonwage Income

Since nonresponses on the income equations in the N.L.S. are not random, consideration was given to using the instrumental variable

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[25] For a detailed description of the construction of the potential wage variable, see Appendix B.

[26] See Heckman, "Three Essays," for a detailed discussion of labor supply in a life-cycle context.

technique to estimate nonwage income for those respondents for whom income information was missing.[27] However, the use of such an imputed nonwage income measure would have the same problems as were mentioned with regard to the imputed wage. Also the multicollinearity problem becomes severe if both wage and income variables are imputed, since explanatory variables would be expected to be similar. For this reason, it was decided to reduce the nonresponse rate by imputing a zero to any income component (other than husband's or wife's earnings) where there was a nonresponse. This technique may lead to some understatement of actual nonwage incomes but was considered superior to an imputation procedure.

Isolation of income effects requires the examination of variations in income sources that are not altered by differences in the wage rate. For the purposes of this study, in the predisruption period nonwage income includes the husband's earnings (whether wage, salary or self-employment income), his asset income (including rental income receipts and interest and dividend income), any unemployment compensation received by the husband, the respondent's asset income (including rental, interest and dividend income), the income of any other family members in the household, and any financial assistance from relatives.[28] In the postdisruption period the nonwage income components

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[27] Of those who had no answer on the survey question with regard to either the wife's or husband's earnings, 43.3 percent were families where both the husband and wife were working less than 26 weeks.

[28] There are definite weaknesses in the NLS survey instrument with regard to measurement of the various components of family income. If the respondent is living in an extended family (other than alone

remain the same, although obviously all income, both earned and unearned, of the husband is excluded.

The size of the income effects is assumed to remain unchanged over the disruption cycle. There are three possible factors, however, which might alter this expectation. One would be measurement error in the construction of the income variable, particularly in the postdisruption period where there is little variation among respondents in the level of nonwage income received. This lack of variation is due in part to the inadequacy of the survey instrument's questions with regard to family income and in part, to the relative youth of the sample, as manifested by a low level of asset accumulation. A second factor is the possibility that, at survey point T, the subsequent loss of the husband's earnings is being anticipated, in which case nonwage income levels (primarily determined by the husband's earnings) will have little effect on the young woman's labor supply behavior. Finally, if unearned income is subject to the same implicit tax rate as earned income for those who receive welfare, the size of postdisruption income effects will be reduced.

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or with her husband), she is only asked the total income of all family members living in the household and then the response is categorized according to the income level. In order to get a continuous income measure, total family income is then set at the midpoint of the particular category. Also, such respondents may have included welfare payments in their responses to the total family income question. To the extent that this was done, the nonwage income measure for these individuals is overstated.

An alternative to the use of nonwage income was to value the family's net assets. Unfortunately, since detailed information on assets was not available for the survey years, 1969, 1970 and 1975, this alternative proved infeasible.

As mentioned in the introduction to this subsection, if the influences of wages and income on labor supply are to be isolated, other social and demographic determinants of labor supply must be held constant. These include the following factors: (1) the duration of the respondent's marriage; (2) the presence of own children in the household; (3) whether or not the respondent's residence is in an SMSA; (4) the U.S. female unemployment rate; (5) the health of the respondent; (6) the probability of public assistance receipt; (7) the potential earnings of other family members. For the purposes of this study, all of these variables are assumed to be exogenous.

The specified control variables are listed below with a brief statement as to their hypothesized relationship to labor supply.

Access to Welfare: As was mentioned in the section of this chapter dealing with sample selection, the exclusion from the sample of those women who are receiving public assistance would substantially reduce the meaningfulness of the results. On the other hand, the simultaneous relationship between the receipt of such assistance and labor supply prevents the explicit inclusion of a welfare status variable in the model. For this reason, two dummy variables are constructed which attempt to proxy for the probability that a respondent will receive such assistance (in particular, AFDC), given the level of benefits and eligibility requirements in her state of residence. States with above the mean level (among all states) of AFDC payments per recipient and with above the mean proportion of eligible population actually receiving such benefits are classified as "high welfare"

states. States falling outside these two categories constitute the reference group. Living in a state with high benefits and high accessibility would be expected to reduce labor supply, while low benefits and stringent eligibility requirements would be expected to increase labor supply relative to the reference group.[29]

Other Adult Family Members: The inclusion of a variable indicating the number of family members (other than a husband) over the age of 18 is necessary for two reasons. In part, this variable is introduced to control for differences in nonwage income levels which may be due solely to whether or not the respondent and her husband, if any, are living in an extended family arrangement (see footnote 29 and Appendix B for a detailed description of the problem). This variable also controls for the probability of the earnings of other wage earners being available to the household. The sign of this variable is expected to be negative since the presence of such potential earnings would serve to reduce the respondent's labor supply. On the other hand, it is possible that the presence of other adults may reduce the cost of working for a woman with children and therefore may lead to increased labor supply.

Children: Since the sample population is restricted to young women, who have not necessarily completed childbearing, a variable controlling for the presence of at least one child was considered to

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[29] See Appendix B for a detailed description of the construction of this variable.

be more important than the total number of own children in the household. Using those women without children as the reference group, two dummy variables are constructed, one for the presence or non-presence of an infant (under 2 years of age) in the household and the other for the presence of a youngest child two years of age or older.

The hypothesized signs of these dummy variables are ambiguous. The presence of a child creates a greater need for income and would be expected to increase time devoted to market work. Children, however, also increase the costs associated with that market work and therefore, may serve to deter increased participation. Nevertheless, it is expected that particularly with the presence of an infant, the negative effect on labor supply will dominate. The presence of an infant is presumed to have a stronger negative effect than the presence of an older child.

Duration of Marriage: This variable is included in the labor supply models chiefly as a control for differences in the duration of the marriages of those women who are about to have their marriages break down relative to those women whose marriages remain stable.[30] Since there is little age variation among these women, and since the effect of duration of marriage is independent of the level of family

[30]As can be seen in Table 7 in Chapter III, disrupting women in the predisruption period differ from maritally stable women in their mean duration of marriage. They likewise differ in their mean age. However, since the age and duration variables are very highly correlated (.70), the decision was made to include only the duration of marriage variable in the labor supply function.

income and the presence of a child for both marital status groups, the size of the effect is expected to be small and the sign ambiguous.

Health: A self-reported health status variable is included directly in the labor supply function (as well as indirectly through the expected wage) since persons who report a physical disability would be expected to have reduced time in the labor force. The fact that the measure of health status is self-rated means that responses may be altered by economic factors. For example, a respondent who is not working and receiving welfare may be more likely than her working counterpart to rationalize her position by stating that she does have a health condition which inhibits her ability to work.[31] If this effect was manifested, then the size of the coefficient might be larger and more significant than would be true if this variable proxied only for an objective measure of the respondent's health status.

SMSA/nonSMSA Residence: Living in an SMSA is hypothesized to have a direct positive effect on labor supply as well as an indirect positive effect through the expected wage rate. The more diverse labor market within the SMSA would be expected to provide more job alternatives, thus being in an SMSA should be positively related to the hours worked.

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[31] For a more complete discussion of the possible interactive relationship among health, status, public assistance and labor supply, see Donald O. Parsons, "Black/White Differences in Labor Force Participation of Older Males," mimeographed (Columbus: The Ohio State University, 1977).

Cyclical Economic Factors: As mentioned in the description of the data, the sample universe of disruptees represents an aggregate cross-section where comparisons are made at a point in time in the disruption cycle rather than across survey years. Therefore, it is necessary to control for cyclical trends in the economy which may have had an independent influence on the labor market behavior of these women. The inclusion of such a variable is particularly important in the comparison of the labor supply functions of those who will disrupt with those women whose marriages remain intact. The maritally stable group is a cross-section, the values of whose parameters are taken from a single survey year, 1971. The values of the parameters for the disrupting sample are taken from the years, 1968 to 1975, depending on when the disruption occurs and the point in the disruption cycle being surveyed.

The U.S. female unemployment rate is used to proxy for these cyclical trends. A variable is constructed using the relevant unemployment rate for the survey year in which the variables are being measured. If there are such cyclical effects, they are hypothesized to be negatively associated with annual hours worked since the "discouraged worker" effect is expected to dominate the "additional worker" effect.[32]

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[32]Since these women at T are on the verge of a marital disruption and at T + 2 have no husband in the household, the additional worker effect would exist only at T and would be expected to be small. See Appendix B for details on the construction of all variables included in the labor supply functions.

CHAPTER III

EMPIRICAL RESULTS

Comparison of Marital Disruptees in the Pre- and Postdisruption Periods

Tabular Results

Changes in Financial Resources

From an economic perspective, changes in family income levels as a result of the loss of the husband's earnings to the household (given the high probability that the woman retains custody of her children, if any) represent the most overt manifestation of disadvantage associated with marital disruption. Table 2 gives selected mean income characteristics of the disrupting women by race at T and T + 2. The table illustrates the sharp declines in family income for both whites and blacks that accompany separation or divorce, although the black disruptees have lower absolute incomes at both T and T + 2.[1] For these young women, with little or no personal asset income, almost all of the

[1] A cautionary note regarding these racial differences in income is in order. To the extent that welfare payments and/or income from other family members may represent more important income sources in maritally disrupted black households, differences between black and white incomes may be overstated due to the possible understatement of these two income sources in the raw data.

Table 2

Selected Mean Income Characteristics of Marital Disruptees by Race at Times T and T + 2[a,b]

Characteristics	Whites			Blacks		
	T	T+2	Δ	T	T+2	Δ
Mean family income	7493	5182	-2311	6058	3542	-2516
Mean respondent's earnings	1760	2905	+1145	1493	2140	+647
Mean nonwage income[c]	5733	2277	-3456	4565	1402	-3163
Percent with family member receiving public asst.[d]	5.8	28.1	+22.3	16.4	51.1	+34.7
Percent of household below poverty[e]	11.9	25.9	+14.0	22.0	49.7	+27.7

[a]All income figures are weighted and adjusted to 1967 dollars.

[b]The sample universe includes enrolled women.

[c]Nonwage income is defined as total family income less the respondent's earnings.

[d]A positive response indicates that some member of the respondent's household is receiving some form of public assistance during the past 12 months.

[e]Poverty income is defined according to the standard definitions of poverty as published by the C.P.S.

decline reflects the loss of the husband's income, primarily his earnings. The table also indicates the increase in the respondent's earnings between the pre- and postdisruption periods.

There are racial differences in the extent to which the young women are able to compensate for the lost income to the household. While the drop in family income is similar for both races (although the decrease for blacks is a little larger), the increase in the mean earnings of the white respondents is about 65 percent; for the black respondents, the increase is 43 percent. With these increased earnings, the white woman compensates for 33 percent of the loss of nonwage income between T and T + 2, while the black woman compensates for only 20 percent.[2]

Table 2 also points out the importance of public assistance as a financial option to the maritally disrupted woman.[3] Within both races from the time T to T + 2, there are sharp increases in the proportion of disruptees reporting that their families had received some form of public assistance during the preceding year. The increase for black women (35 percentage points) is substantially larger than for whites (23 percentage points). Blacks are more likely than whites to be

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[2]Nonwage income is defined here as total family income less the respondent's earnings.

[3]Receiving welfare reflects a positive response to the question, "Did anyone in this family receive any welfare or public assistance in the past 12 months?"

receiving public assistance at both survey points.[4] The increasing proportions of families receiving some form of assistance are consistent with the figures giving the percentage of households falling below "poverty income." Blacks who are above poverty at T were more likely than their white counterparts to fall below poverty at T + 2.[5]

Such data, however crude, do allow a comment on the validity of certain of the specified hypotheses about racial differences among disruptees in the choice of financial options to compensate for the loss of the husband'd earnings. Although absolute income levels for blacks are lower at both T and T + 2, the decline in family income for black disruptees is very similar to that of their white counterparts. This is due to the relatively small increase in earnings on the part of black women from T to T + 2. On the other hand, the assumption that blacks are more likely to be receiving public assistance in the post-disruption period is confirmed.

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[4] Of those respondents who are in the sample at T + 2 (and therefore, have not remarried) and who respond at T + 2 that they have received some public assistance or welfare during the previous year, only 6 percent of the whites and 13 percent of the blacks were also receiving some assistance in the year prior to survey point T.

[5] Of those white disruptees who were above poverty at T, 26 percent had family incomes at T + 2 which put them below poverty. For black disruptees above poverty at T, 40 percent fell below the poverty income ceiling at T + 2.

Changes in Labor Supply

The above income data suggest that employment is one major means by which women whose marriages break up compensate for the loss of the spouse's earnings. Figure 1 traces the mean annual hours worked by race of the sample of maritally disrupted women over the period in which the disruption occurs, T - 1 to T + 2. At T there is almost no racial difference in mean hours worked. At T + 1, however, the difference between races is substantial, with the white disruptees working an average of 1046 hours and blacks, 884 hours. By the following survey date (T + 2), the gap has further widened with blacks working an average of 331 hours less than their white counterparts.[6]

In an effort to investigate more closely these racial differences in labor supply (as measured by annual hours worked), the white and black samples were further stratified by the receipt or nonreceipt of public assistance.[7] Such a stratification virtually eliminates post-disruption labor supply differences across races, as can be seen in Figure 2. For those not receiving assistance, the increase in mean

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[6] A tracing of the labor force participation rates of these women over the same periods, T to T + 2, indicates that of those women who were in the labor force at T, 74 percent continued to report themselves in the labor force at T + 1 and T + 2.

[7] Although the relationship between the receipt of public assistance and labor supply is a simultaneous one, this result is nevertheless interesting (see Appendix E). It again reinforces the importance of the option of public assistance as a substitute for market work for maritally disrupted women.

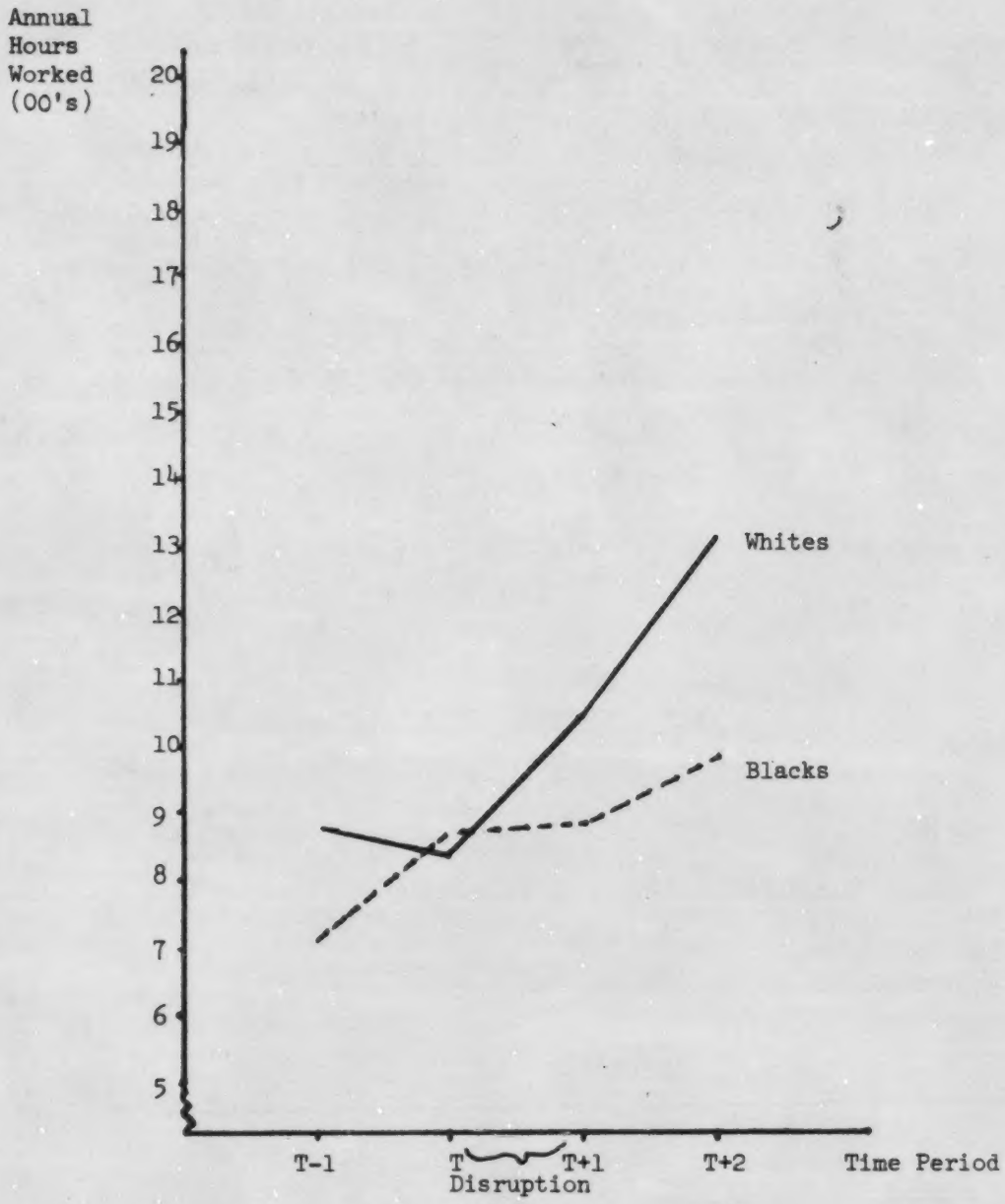

Figure 1

Mean Annual Hours Worked by Marital Disruptees
by Race from T-1 to T+2[1]

[1]These figures are weighted means.

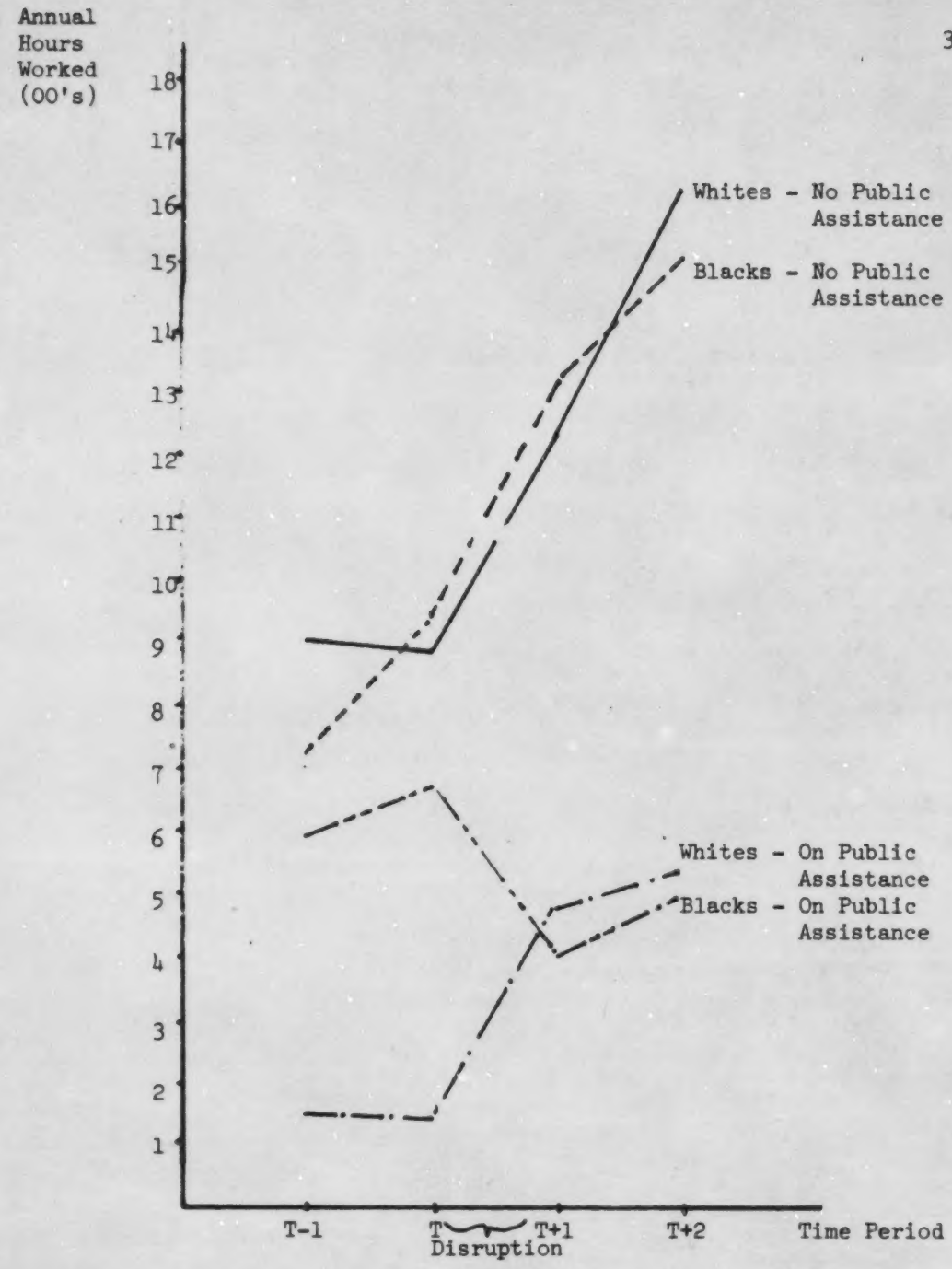

Figure 2

Mean Annual Hours Worked by Marital Disruptees by Race by Receipt of Public Assistance from T-1 to T+2[1]

[1]These means are weighted.

annual hours worked from periods T to T + 2 becomes steeper for both blacks and whites. For whites not receiving public assistance, there is an increase on average of 737 hours, while the increase for all whites is 479 mean hours. The results are similar for blacks; those blacks not receiving assistance show an increase of 587 hours, while the unrestricted sample has an increase of only 98 hours. As is evident by the above figures, the absolute increase in mean hours worked is larger for whites, regardless of whether a restriction on public assistance receipt is introduced.

Results of the Multivariate Analysis

Tables 3 and 4 present the summary statistics and regression results by race for the maritally disrupting sample at T and T + 2. An examination of the summary statistics indicates those parameters which undergo substantial alterations from T to T + 2. As expected, for both races nonwage income levels drop substantially as does the percentage of women having a youngest child under 2. It is interesting to note that among white disrupting women, in the postdisruption period the percentage of women stating that they had a health problem sufficiently severe to affect their ability to work doubles. At T + 2 an increased proportion of these women are living in an extended family setting (with another adult over 18 in the household). This latter result is also seen within the sample of black women, but the increase is insubstantial. Finally, the increase in the annual hours of work is as expected, with an increase for whites of almost 60 percentage points and for blacks, 14 percentage points.

Table 3

Summary Statistics: Determinants of Annual Hours Worked in the Pre- and Postdisruption Periods (T and T + 2) by Race[a,b]

(st. deviations in parentheses)

Characteristics[c]	Race			
	Whites		Blacks	
	T	T + 2	T	T + 2
Duration of Marriage	6.78	7.08	5.97	6.22
	(4.99)	(5.16)	(4.63)	(4.60)
Age of Youngest Child < 2	.49	.26	.68	.35
	(.50)	(.44)	(.47)	(.48)
Age of Youngest Child ≥ 2	.12	.28	.12	.28
	(.33)	(.45)	(.33)	(.45)
Nonwage Income	5668	2083	4678	1351
	(3529)	(4682)	(3548)	(2587)
Respondent's Health	.06	.12	.06	.06
	(.24)	(.33)	(.23)	(.24)
Potential Wage	1.60	1.75	1.48	1.60
	(.38)	(.33)	(.39)	(.40)
High Welfare State of Residence	.40	.45	.29	.27
	(.49)	(.50)	(.46)	(.45)
Low Welfare State of Residence	.27	.19	.48	.42
	(.45)	(.40)	(.50)	(.50)
Unemployment Rate (U.S.)	5.52	6.28	5.58	6.30
	(.83)	(.75)	(.88)	(.78)
Number of Household Members over 18	.24	.61	.67	.77
	(.65)	(.92)	(1.13)	(1.07)
SMSA Residence	.66	.70	.65	.73
	(.47)	(.46)	(.48)	(.44)
Annual Hours Worked	823	1312	840	954
	(789)	(893)	(800)	(909)

[a] The sample universe includes those women who experience a marital disruption between 1968 and 1973 and who were not enrolled in school. See Chapter II for a more detailed description.

[b] The summary statistics are unweighted.

[c] Exact descriptions of the construction of the characteristics are given in Appendix B.

Table 4

Regression Results: Determinants of Annual Hours Worked in the Pre- and Post-disruption Periods (T and T + 2) by Race[a,b]

(t statistics in parentheses)

Characteristics[c]	Race			
	Whites		Blacks	
	T	T + 2	T	T + 2
Duration of Marriage	23.10**	- 2.14	16.18	16.67
	(2.15)	(- 0.15)	(1.06)	(0.98)
Age of Youngest Child < 2	-859.30***	-357.45**	-230.71*	-222.94
	(- 8.18)	(- 1.86)	(- 1.39)	(- 1.24)
Age of Youngest Child ≥ 2	-685.19***	243.09	136.84	431.62
	(- 4.08)	(1.30)	(0.55)	(2.23)
Nonwage Income	- .0053	.006	- .017	.05
	(- 0.41)	(0.38)	(- 0.79)	(1.46)
Respondent's Health	-199.79	-446.47**	-425.53*	-407.57*
	(- 1.05)	(- 2.04)	(- 1.59)	(- 1.30)
Potential Wage	479.94***	752.97***	598.85***	1205.4***
	(3.37)	(2.69)	(2.55)	(4.71)
High Welfare State of Residence	- 23.70	- 4.42	-11.75	-16.03
	(- 0.21)	(- 0.03)	(- 0.07)	(- 0.09)
Low Welfare State of Residence	51.62	409.72**	296.41	410.37***
	(0.44)	(2.07)	(1.65)**	(2.34)
Unemployment Rate (U.S.)	- 51.77	- 8.50	-54.26	-151.04*
	(- 0.88)	(- 0.09)	(- 0.72)	(- 1.55)
Number of household members over 18	- 36.18	- 77.97	-89.09*	-73.64
	(- 0.50)	(- 0.90)	(- 1.40)	(- 0.80)
SMSA Residence	-193.99	-218.49	138.55	-274.65
	(- 1.82)	(- 1.17)	(0.85)	(- 1.47)
Constant	862.3***	254.11	235.92	-122.65
	(2.52)	(0.32)	(0.47)	(- 0.18)
N	235	145	161	135
R^2 (adj)	.29	.16	.10	.26
F Ratio	9.66***	3.49**	2.57**	5.18***

a Sample universe includes those women who experience a marital disruption between 1969 and 1973 and who are not enrolled in school. See Chapter II for a more detailed description.

b The regression results are unweighted.

c Significance levels are given for one-tailed tests, except for the "duration of marriage" variable where significance levels are given for two-tailed tests.

*** Significant at 1 percent level.

** Significant at 5 percent level.

* Significant at 10 percent level.

Income and Wage Effects

For both races, there are differences between the pre- and post-disruption periods in the signs and sizes of the income and expected wage variables. In the predisruption period, for both races, the nonwage income coefficient, while negative, is insignificant. There are several possible explanations for the insignificance of this nonwage income coefficient in the predisruption period. These will be detailed later.[8]

In the postdisruption period (T + 2), the income effects are actually positive.[9] A positive income effect, of course, is inconsistent with the conventional theory of labor supply. A possible explanation of this result is the likelihood in the postdisruption period of substantial measurement error in the construction of the nonwage income variable. In those households where the wife and husband, if any, do not live alone, the respondent is asked only the amount of the total income of all family members in the household. There is no distinction made as to whether this income is available for the respondent's use. For this reason, a control variable for the number of adult members was added as an additional explanatory variable. As expected, it is collinear with the level of nonwage income. A possible

[8] See page 69 of this chapter for a complete discussion of possible alternative explanations.

[9] In the case of black women, the sign and size of the income coefficient are significantly altered between the pre- and postdisruption periods (T and T + 2). See Appendix C for a complete list of confidence intervals for the labor supply parameters included in the model.

consequence of this collinearity is to reduce the size and significance of the nonwage income coefficient.[10]

The gross wage effects for both races, on the other hand, are positive and highly significant at both points, T and T + 2. Contrary to prior expectation, the size of the coefficients nearly doubles for whites and more than doubles for blacks, with blacks being the more responsive at both survey points. The substitution effects in elasticity form for each subgroup are given in Table 5.

Table 5

Substitution Elasticities in the Pre- and and Postdisruption Periods by Race[a]

Substitution Elasticities	Time Period	
	T	T + 2
Whites	.94	1.49
Blacks	1.08	2.10

[a]Calculated from figures given in Tables 3 and 4.

[10]At T + 2, evidence of measurement error is manifested in the fact that within both races the coefficient of variation on the nonwage income variable is about 2. In addition, the distribution of nonwage income appears bimodel with approximately 50 percent of the disruptees having zero nonwage incomes and 25 percent, incomes of $2,000 or above.

A second explanation for the positive sign of the nonwage income coefficient at T + 2 is given by Rosenman who obtains a similar result in her investigation of postdisruption labor supply using the N.L.S. older women's data. Given the low mean levels of post-split income, the lower the income the more likely that the family can qualify for welfare, providing the head with an incentive to reduce labor supply. The higher the income, the more likely it is that augmentation requires increased labor supply by the respondent. See Linda S. Rosenman, "Marital Status Change and Labor Force Readjustments: An Analysis of Female Heads of Families," Ph.D. dissertation (St. Louis: Washington University, 1977), p. 93.

The increase in the size of the substitution elasticities for blacks between the pre- and postdisruption periods is substantially greater than for whites; blacks also have higher absolute elasticities at both points in time.

Such results can possibly be explained by a positive bias to the potential wage rates for the disruptees due to the interaction among low wage rates, the AFDC program and labor supply. Divorced or separated women with low expected wage rates work less not only because of their lower earning potential but also because the receipt of welfare benefits is a more attractive option for them than their higher wage counterparts. With the receipt of such welfare, financial benefits to increased labor supply are further reduced by the implicit negative tax on wages that such a program imposes.[11]

It is interesting to note that other studies which have analyzed the labor supply behavior of female heads of household (where public assistance recipients have been included in the universe) have produced similar results. Garfinkel and Masters find that gross wage effects, where expected wages are instrumentalized in a very similar manner to this study, are much larger for female heads of household

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[11] Stratification of the postdisruption labor supply models by whether or not the young woman has finished high school should help to clarify some of these unexpected results. See Section C for a discussion of the results obtained from this stratification.

than for married women with children. Rosenman, who investigates the "pre- and post-split" labor supply behavior of a sample of older women (aged 30 to 44 in 1967) also finds larger gross wage effects in the postdisruption period. In addition, she also obtains positive income effects in the post-split labor supply model.[12]

Control Variables

(1) Whites

For the subset of white women, the control variables, particularly those variables which indicate the presence or nonpresence of a child in the household, are the most responsive to the change in marital status. The coefficients of the dummy variables referring to the presence of a child in the household are significantly different from T to T + 2. The responsiveness of the young woman's labor supply to the presence of an infant (under 2) relative to being childless is substantially reduced, although the coefficient remains negative and significant (at the 5 percent level). If the age of the youngest child is over two, the labor supply response is highly significant and negative in the predisruption period, and actually becomes positive at T + 2.

Figure 3 illustrates the predicted mean annual hours worked for whites by the age of the youngest child over the disruption cycle,

[12] See Garfinkel and Masters, "Effect of Income," pp. 45-46 and Rosenman, "Marital Status Change," pp. 84-90.

T - 1 to T + 2, holding the other parameters in the labor supply model constant. The increase in mean hours worked is substantial for those women with children, while there is little change for those women without children. The only unexpected result, as was mentioned above, is the prediction that by T + 2 women with a youngest child aged two or older will have larger mean annual work hours than their childless counterparts.

Other control variables which vary significantly between T and T + 2 include the "duration of marriage" and "low welfare state of residence." As hypothesized, the positive effect of living in a "low welfare" state is much stronger in the postdisruption period. Once controls are put on the presence of children and nonwage income levels, duration of marriage is positively related to labor supply at T. This relationship disappears by T + 2. The reasons for the alteration in both the sign and the coefficient of the "duration of marriage" variable are not evident.

(2) Blacks

In comparison to the subset of white women, among black respondents the control variables are less significantly altered by the disruption process. Only the coefficient of SMSA/nonSMSA variable is altered significantly. The sign of the SMSA variable actually moves from being nonsignificant and positive, to negative. There appears to be no adequate explanation for this phenomenon.

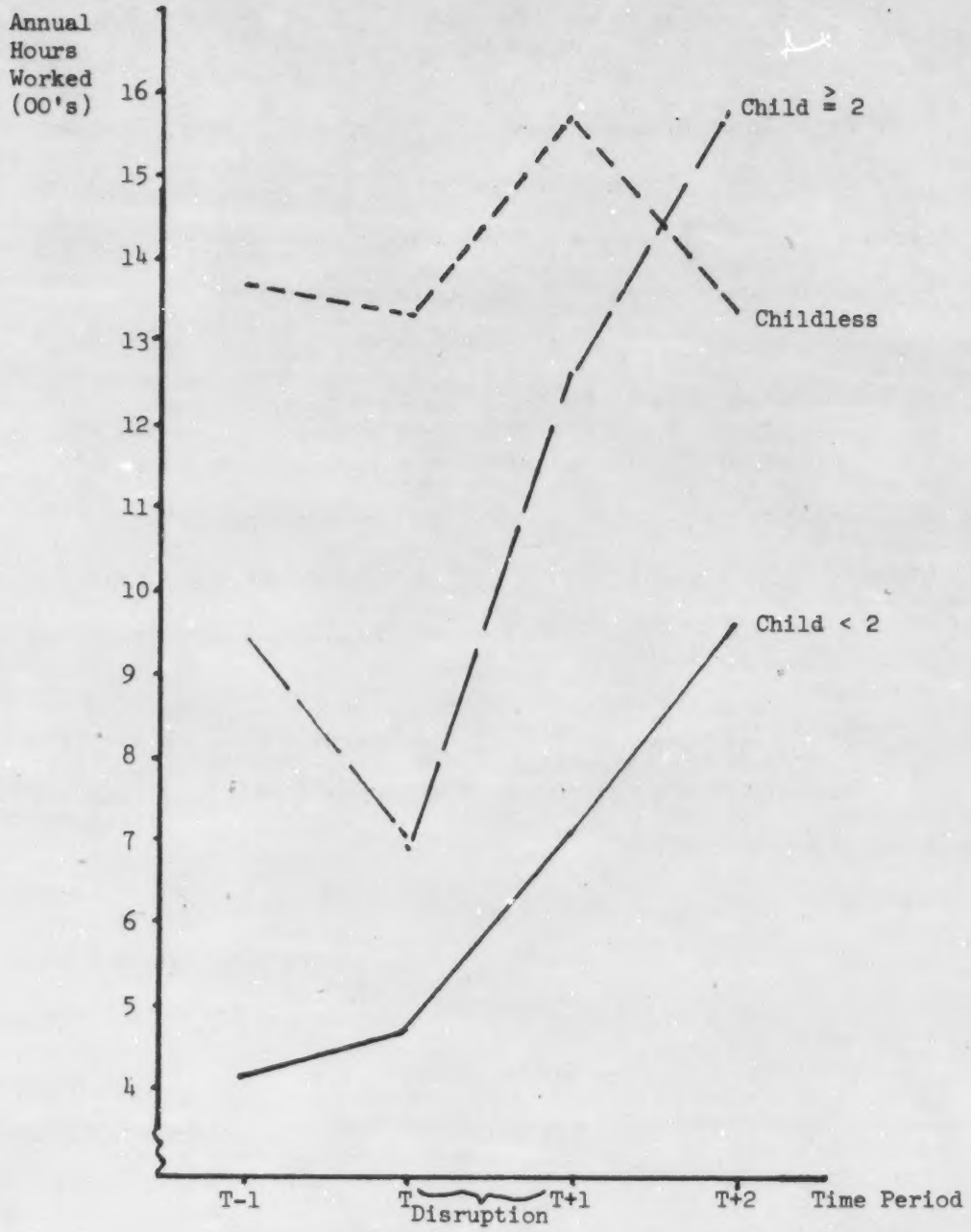

Figure 3

Adjusted Annual Hours Worked by Age of the Youngest Child from T-1 to T+2: Whites

[1]This figure is constructed from regression results presented in Table 4. These results are unweighted.

Unlike the subset of white women, for the blacks there are no significant changes in the size or the signs of the variables controlling for the presence of a child. Figure 4 gives predicted mean annual hours of work from T - 1 to T + 2 by the age of the youngest child in the household (if any), holding all other parameters constant. Only those with a child under 2 follow a clear pattern. In contrast to white women, these women have almost no predicted increase in hours worked over the disruption cycle once all other parameters are held constant. The pattern for the other two child status groups is much less clear, perhaps partly reflecting the small proportion of black women who are childless and the diverse nature of the group. It is interesting that the older child effect (age of youngest child ≥ 2) is positive at both survey points.[13]

Results of the Postdisruption Multivariate Analysis Stratified by Education

In order to examine more carefully the capability of the models as formulated to explain adequately variations in labor supply among those women with the highest probability of being eligible for welfare,

[13] Unadjusted figures for black women on the mean annual hours worked by the age of the youngest child indicate a similar pattern. At T - 1 and T, childless women actually work fewer mean hours than women with older children. At T + 1 and at T + 2 the difference in mean hours worked between the two groups is slightly over 100 hours.

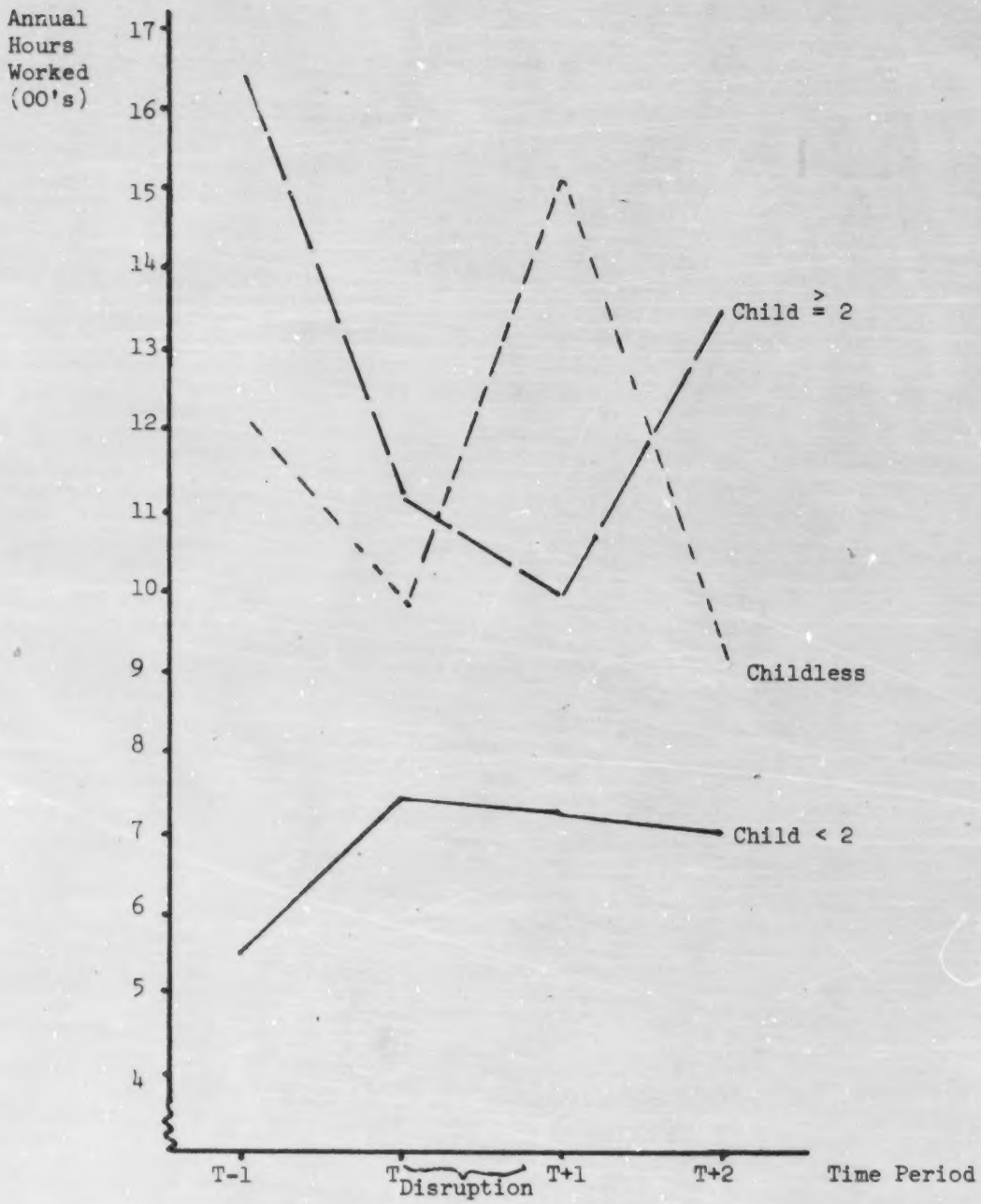

Figure 4

Adjusted Annual Hours Worked by Age of the Youngest Child from T-1 to T+2: Blacks[1]

[1]These figures are constructed from regression results presented in Table 4. These are unweighted figures.

the postdisruption models were further stratified by whether or not the respondent had completed high school. The empirical results are given in Tables 6 and 7.[14]

As expected, the summary statistics indicate higher levels of non-wage income, higher potential wages, more hours worked per year, shorter durations of marriage and lower percentages with children among those who have completed high school as compared with high school dropouts. One interesting result is the fact that 20 percent of white high school dropouts claim a health disability which limits their activity or the kind of work they can do. This percentage is significantly higher than the percentages for white graduates or for blacks in either educational attainment category. This result serves to reinforce the premise that, because health status is self-rated, responses to the question can be influenced by economic and other environmental circumstances. For example, a female head of household may rationalize her receipt of public transfer payments by specifying that she has a physical disability limiting her ability to work.

Whites

Examination of the regression results for white disrupted women (see Table 7) produces some interesting results. While the adjusted R^2 value for white dropouts is extremely high (.54), the R^2 value for

[14] One obvious problem with such a stratification is that the sample sizes become extremely small.

Table 6

Summary Statistics: Determinants of Annual Hours Worked in the Postdisruption Period (T + 2) by Race and by Education[a,b]

(st. deviations in parentheses)

Characteristics[c]	RACE			
	Whites		Blacks	
	Dropouts[d]	Graduates[e]	Dropouts	Graduates
Duration of Marriage	8.42	6.37	6.75	5.60
	(6.07)	(4.49)	(5.00)	(4.05)
Age of Youngest Child < 2	.40	.21	.44	.24
	(.48)	(.41)	(.50)	(.43)
Age of Youngest Child ≥ 2	.26	.29	.29	.27
	(.44)	(.46)	(.46)	(.45)
Nonwage Income	1800	2232	1320	1387
	(3048)	(5354)	(2408)	(2803)
Respondent's Health	.20	.08	.07	.05
	(.40)	(.28)	(.25)	(.22)
Potential Wage	1.48	1.89	1.40	1.83
	(.21)	(.29)	(.33)	(.33)
High Welfare State of Res.	.42	.46	.26	.29
	(.50)	(.50)	(.44)	(.46)
Low Welfare State of Res.	.18	.20	.44	.40
	(.39)	(.40)	(.50)	(.49)
Unemployment Rate (U.S.)	6.34	6.25	6.15	6.48
	(.67)	(.78)	(.84)	(.67)
Number of Household Members over 18	.70	.56	.86	.66
	(.97)	(.90)	(1.10)	(1.04)
SMSA Residence	.62	.75	.67	.81
	(.49)	(.44)	(.47)	(.40)
Annual Hours Worked	931	1513	632	1335
	(866)	(845)	(735)	(952)

a For a description of the sample see Table 4.
b The regression results are unweighted.
c Exact descriptions of the construction of the characteristics are given in Appendix B.
d Dropouts are defined as having completed less than 12 years of school.
e Graduates are defined as having completed 12 or more years of school.

Table 7

Regression Results: Determinants of Annual Hours Worked by Race and by Education in the Postdisruption Period (T + 2)[a,b]

(t-statistics in parentheses)

Characteristics[c]	RACE			
	Whites		Blacks	
	Dropouts[d]	Graduates[e]	Dropouts	Graduates
Duration of Marriage	37.43***	- 26.21	26.81	20.91
	(2.48)	(- 1.18)	(1.21)	(0.68)
Age of Youngest Child < 2	- 88.59	-369.87*	-365.30**	100.75
	(- 0.37)	(- 1.50)	(- 1.75)	(0.29)
Age of Youngest Child ≥ 2	660.80	38.15	136.49	576.48
	(2.78)	(0.15)	(0.50)	(1.94)
Nonwage Income	- .02	.003	0.05	.04
	(0.53)	(0.18)	(1.10)	(0.65)
Respondent's Health	49.39	-723.48**	-355.43	-595.09
	(0.21)	(- 2.27)	(- 1.02)	(- 0.96)
Potential Wage	2122.2***	91.24	444.62	1154.1**
	(3.18)	(0.22)	(1.16)	(2.28)
High Welfare State of Res.	-363.16**	181.99	106.27	-210.87
	(- 1.81)	(0.82)	(0.46)	(- 0.68)
Low Welfare State of Res.	952.21***	138.98	319.28*	106.40
	(3.75)	(0.54)	(1.46)	(0.34)
Unemployment Rate (U.S.)	-547.54***	181.40	-158.90*	-169.59
	(- 3.70)	(1.55)	(- 1.46)	(- 0.91)
Number of Household Members over 18	43.03	-147.20	- 83.07	- 10.35
	(0.39)	(- 1.28)	(- 0.80)	(- 0.06)
SMSA Residence	- 65.08	-290.13	133.12	-768.19
	(- 0.28)	(- 1.14)	(0.60)	(- 2.11)
Constant	761.43	680.73	703.46	-635.01
	(0.71)	(0.64)	(0.88)	(- 0.45)
N	50	95	73	62
R^2 (adj.)	.54	.06	.18	.11
F Ratio	6.19***	1.51	2.43*	1.70

a For description of sample, see Table 4.
b The regression results are unweighted.
c Significance levels are given for one-tailed tests except for the "duration of marriage" variable where significance levels are given for two-tailed tests.
d Dropouts are defined as having completed less than 12 years of school.
e Graduates are defined as having completed more than 12 years of school.
*** Significant at 1 percent level.
** Significant at 5 percent level.
* Significant at 10 percent level.

white high school graduates is very close to zero (.06). Although the small size of the sample of white dropouts makes any conclusions somewhat tentative, the results do indicate that there are distinct differences in the postdisruption labor supply responses of graduates and dropouts. The mean annual hours of work of white graduates are significantly greater and have a lower variance than those of their less educated counterparts. This lack of variation in work hours among high school dropouts accounts for the low explanatory power of the model. On the other hand, the specified labor supply model is very successful in explaining variations in postdisruption work behavior among dropouts, the women with the highest probability of receiving some type of public assistance. These results indicate that, at least among white maritally disrupted women, combining high school dropouts and graduates in the postdisruption labor supply model (see Table 4) masks significantly different work responses on the part of the two groups to the specified parameters.

Examination of variations in individual coefficients between the two groups should serve as an indicator of where the direct and indirect effects of public assistance receipt, if any, are being manifested. As hypothesized, the coefficients of the welfare variables ("high and low welfare state of residence") are large and significant in the right directions only for the sample of dropouts. The positive labor supply response to potential wage rate changes is also

significant only among high school dropouts; this result contradicts prior expectations.

This difference in the sizes of the gross wage effects between the dropouts and graduates warrants further attention. Calculations of the pure substitution elasticities for the two gropus yield significantly different results, a value of 3.40 for white dropouts and .02 for white graduates (t=2.68).[15] These results seem to confirm the explanation given earlier in this section for the increase in the size of the gross wage effects for both whites and blacks between the pre- and postdisruption periods. Because these women are young, their nonwage income levels when disrupted remain fairly constant across educational levels. The young woman with a relatively high earning potential, i.e. having graduated from high school, will perceive no real nonmarket alternatives to increasing her financial resources. She, like the male head of household, will, therefore, exhibit little response to wage rate changes because she is already working almost full-time and due to her lack of financial alternatives, cannot afford to alter her labor supply. The white high school dropout, on the other hand, has the higher probability of being eligible for welfare, given her low

[15] One obvious problem with such calculations, as was mentioned earlier, is the possibility of substantial measurement error in the construction of the nonwage income variable. This error in all probability accounts for the positively signed income effects for three out of the four subgroups being studied.

earning potential and the high incidence of health-related disability. Public assistance thus becomes a substitute for her market work, allowing her the option of leaving the labor market in response to declines in her potential wage.[16]

Only the presence of an infant in the family and the existence of a physical health disability are significant determinants of labor supply among high school graduates. These results are as expected, given the fact that the disruptees who have at least a high school diploma have a mean annual hours worked of about 1,600 hours (close to full-time) and a relatively low standard error. There is thus little variation in labor supply to be explained by the specified model.

One interesting result not mentioned above is the negative and significant coefficient on the "unemployment rate" variable for high school dropouts; while for high school graduates, the same coefficient is actually positive. This indicates that young women who had not completed high school and who are in a disrupted status in the survey years where female unemployment rates were high had significantly decreased labor supply as compared to their counterparts whose marriages

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[16] The construction of the potential wage variable is such that wage rates can only be altered by changes in educational levels, residence (in or out of the South or an SMSA), or health status. The large substitution effect for high school dropouts indicates that the more years of education such a young woman can complete, the greater will be the intensity of her participation in the labor force.

became disrupted in years where the unemployment rates were lower. For high school graduates, the reverse was true. Thus the labor supply of high school dropouts appears to be more sensitive to cyclical economic changes than the supply of their better educated counterparts.

Blacks

The differences between black dropouts and graduates in terms of the responsiveness of labor supply to the specified parameters are much less pronounced than those between white dropouts and graduates. The adjusted R^2 values are similar; the model for black dropouts is only marginally significant and the model for graduates has no statistical significance. Nevertheless, as was true for white female heads, the effect of living in a "low welfare" state is significant for black dropouts but not for graduates.

In contrast to the results for whites, the substitution elasticity is smaller (1.06) for black dropouts than for graduates (1.66), but the difference is not significant ($t = .95$). The results obtained for black dropouts and graduates are the results expected from labor-leisure choice theory. Nevertheless, the marginal significance of the black models requires that such a conclusion be advanced with the qualifying statement that further study is needed.

Comparison of Maritally Disrupting Women with the Reference Group of Maritally Stable Women at T

It is possible that the preceding discussion of alterations in the young women's initial labor supply response to the occurrence of marital disruption may in fact understate the actual impact of the event. This would be true if, to some degree, the young women act to alter their behavior in anticipation of the imminent marital breakdown. This section, by both tabular and multivariate comparisons, will seek to ascertain whether or not there is such an anticipatory effect.

Tabular Results

Comparing selected income characteristics of the sample of disrupting women in the predisruption period with a reference group of maritally stable women (see Table 8), certain differences are evident. For both whites and blacks mean family income levels and mean levels of husband's earnings are lower for the disrupting sample than the reference group. In absolute terms, income levels are lower for blacks than whites, regardless of prospective marital status. On the other hand, the mean earnings levels of the respondents show little differences among whites, but among blacks those whose marriages are stable have higher levels. This differential among blacks can at least in part be attributable to the higher proportion of welfare recipients among black disrupting women, reflecting the fact that 22 percent of

Table 8

Selected Mean Income Characteristics of Marital Disruptees in the Predisruption Period (T) with Reference Group in 1971 by Race[a,b]

Characteristics	Whites		Blacks	
	Marital Disruptees	Reference Group	Marital Disruptees	Reference Group
Mean Family Income	7493	8664	6058	7003
Mean Husband's Earnings	5147	6039	3927	4651
Mean Respondent's Earnings	1760	1747	1493	1667
% with Family Member Receiving Public Asst.	5.8	3.6	16.4	10.0
% Below Poverty[c]	11.9	3.7	22.0	16.2

[a]For description of construction of the sample of marital disruptees and the reference group, see the text. Sample includes those enrolled.

[b]All figures in the table are weighted.

[c]Poverty income is defined according to standard definitions of poverty as published by the C.P.S.

these women live in families whose incomes are below poverty level. White disruptees are also more likely to be receiving welfare and to have family incomes below poverty than their maritally stable counterparts, but their mean earnings are actually higher.

Results of the Multivariate Analysis

Tables 9 and 10 present summary statistics and regression results by race for the maritally disrupting group at T and the reference group in 1971. Table 9, which gives summary means and standard deviations for the parameters used in the specified labor supply functions, yields certain differences and some notable similarities between the characteristics of the disruptees and those of the reference group.

Among the subsample of whites, there is no difference in annual hours worked or in the percentage of women with a child under two. The reference group, however, is slightly more likely to have a child, a longer duration of their marriage (slightly over 4 years), higher levels of nonwage income, and slightly higher potential wage levels than the disrupting group. Black disruptees, in contrast, are more likely to have a child and to live in a "low welfare" state of residence than their nondisrupting counterparts. Like the white reference group, black maritally stable women have a higher mean nonwage income, duration of marriage (about 3½ years), and potential wage than those who disrupt. As with white women, the mean annual hours of work do not differ significantly between the two groups.

Table 9

Summary Statistics: Determinants of Annual Hours Worked by Prospective Marital Status and Race in the Predisruption Period (T)[a,b]

(standard deviations in parentheses)

Characteristic[c]	Race					
	Whites			Blacks		
	Total	Disruptees	Reference Group	Total	Disruptees	Reference Group
Duration of Marriage	8.18	6.78	8.45	6.80	5.97	7.25
	(5.45)	(4.99)	(5.49)	(5.20)	(4.63)	(5.44)
Age of Youngest Child < 2	.49	.49	.49	.61	.68	.57
	(.50)	(.50)	(.50)	(.49)	(.47)	(.50)
Age of Youngest Child ≥ 2	.17	.12	.18	.16	.12	.17
	(.38)	(.33)	(.39)	(.36)	(.33)	(.38)
Nonwage Income	6533	5668	6697	4898	4678	5018
	(3889)	(3529)	(3933)	(3248)	(3548)	(3071)
Respondent's Health	.06	.06	.06	.05	.06	.05
	(.24)	(.24)	(.24)	(.22)	(.23)	(.22)
Potential Wage	1.76	1.60	1.79	1.55	1.48	1.59
	(.39)	(.38)	(.38)	(.37)	(.50)	(.35)
High Welfare State of Res.	.39	.40	.39	.29	.29	.30
	(.49)	(.40)	(.49)	(.46)	(.46)	(.46)
Low Welfare State of Res.	.27	.27	.27	.53	.48	.60
	(.44)	(.45)	(.44)	(.50)	(.50)	(.50)
Number of Household Members over 18	.38	.24	.40	.67	.67	.67
	(.92)	(.65)	(.96)	(1.14)	(1.13)	(1.14)
SMSA Residence	.63	.66	.62	.65	.65	.64
	(.48)	(.47)	(.48)	(.48)	(.48)	(.48)
Total Marital Status	.16	-	-	.35	-	-
	(.37)			(.48)		
Annual Hours Worked	828	823	829	850	840	856
	(874)	(789)	(889)	(820)	(800)	(832)

[a] For a description of the sample universe of disruptees see Table 4. The reference group consists of women married in 1971 who did not disrupt between 1968 and 1975 and who were not enrolled in school; T represents 1971 for the reference group.

[b] Summary statistics are unweighted.

[c] For a complete description of the construction of characteristics, see Appendix B.

Table 10

Regression Results: Determinants of Annual Hours Worked by Prospective Marital Status and Race in the Predisruption Period (T)[a]

Characteristics[b]	Race					
	Whites			Blacks		
	Total	Disruptees	Reference Group	Total	Disruptees	Reference Group
Duration of Marriage	4.42	21.13**	1.06	17.98**	14.37	18.58*
	(0.92)	(2.01)	(0.20)	(2.13)	(0.95)	(1.81)
Age of Youngest Child < 2	-968.04***	-869.69***	-988.48***	-492.27***	-225.63*	-627.38**
	(-19.91)	(-8.33)	(-18.03)	(-5.34)	(-1.36)	(-5.53)
Age of Youngest Child ≥ 2	-666.58***	-693.62***	-666.05***	-51.36	137.89	-118.93
	(-9.40)	(-4.14)	(-8.47)	(-0.39)	(0.56)	(-0.75)
Nonwage Income	-.029***	.005	-.031***	.018	-.013	.014
	(-5.43)	(-0.40)	(-5.33)	(0.15)	(-0.66)	(0.93)
Respondent's Health	-116.54*	-192.94	-104.11	-503.75***	-413.57*	-598.65**
	(-1.47)	(-1.02)	(-1.19)	(-3.14)	(-1.55)	(-2.93)
Potential Wage	389.22***	439.65***	368.88***	402.94***	538.72***	319.82**
	(6.52)	(3.26)	(5.49)	(2.96)	(2.45)	(1.82)
High Welfare State of Res.	24.06	-11.21	24.25	-81.39	-3.83	-120.51
	(0.52)	(-0.10)	(0.47)	(-0.75)	(-0.02)	(-0.82)
Low Welfare State of Res.	93.17**	44.79	103.02**	173.20*	296.44**	116.0
	(1.87)	(0.39)	(1.86)	(1.59)	(1.65)	(0.83)
No. of Household Members over 18	-24.60	-33.15	-35.54*	-91.33***	-96.72*	-92.70**
	(-1.04)	(-0.46)	(-1.39)	(-2.62)	(-1.55)	(-2.08)
SMSA Residence	-107.76	-189.82	-88.39	91.08	154.11	43.04
	(-2.42)	(-1.78)	(-1.80)	(0.98)	(0.95)	(0.37)
Total Marital Status	-.042	-	-	120.96	-	-
	(-0.00)			(1.56)		
Constant	935.59***	653.13***	1015.9***	322.93	6.36	555.58**
	(7.46)	2.64	(7.20)	(1.25)	(0.02)	(1.66)
N	1473	235	1238	456	161	295
R^2 (adj)	.31	.29	.31	.15	.10	.17
F Ratio	59.50 ***	10.56 ***	55.90 ***	8.30 ***	2. 78**	6.98 ***

a See footnotes 1 and 2 on Table 8.

b Significance levels are given for one-tailed tests except for the "duration of marriage" variable where significance levels are given for two-tailed tests.

*** Significant at 1 percent level.
** Significant at 5 percent level.
* Significant at 10 percent level.

An examination of the labor supply responses of the women whose marriages are to be disrupted and of the reference group (see Table 10) does reveal certain differences.[17] Among whites, the duration of marriage significantly affects only the labor supplied by the disrupting group. On the other hand, nonwage income levels and living in a "low welfare" state of residence are significant determinants of labor supply only for the reference group. In contrast, for blacks, nonwage income effects remain insignificant for both marital status groups and living in a "low welfare" state of residence has a significant effect on labor supply only for disrupting women. The negative labor supply effects of having a child in the household, particularly an infant, are much more pronounced in the case of the reference group.

In order to examine the statistical significance of these apparent differences in labor supply parameter estimates between the two groups, a stepwise regression procedure was applied to a combined sample of the disrupting and reference groups. The functional form included a binary variable for marital status (1 = disrupting group, 0 = reference group), which allows the intercept term to vary, and a set of interaction terms that are the products of this binary variable and the other parameters in the equation, allowing the slope coefficients

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[17] The variable for the U.S. unemployment rate is eliminated from both models. Since the reference group represents a single year cross-section, there is no variation in this variable's value. Among disruptees, the variable has no statistical significance as a determinant of annual hours worked at T.

to vary. This procedure, therefore, permits the testing of any or all of the coefficients in the model.[18] The results obtained from such a fully interacted model, where the interaction terms are not entered until the k + 1 step (with the dummy marital status variable entered first) allow F statistics to be calculated for several different purposes. It is possible to test (1) whether the labor supply functions differ by marital status; (2) whether there are intercept differences, and (3) whether there are slope differences between the two marital status subgroups.

F tests on the entire interacted model indicate no significant differences for either race (whites: .85; blacks: .80). For whites, there are also no significant intercept differences by marital status. Among blacks, the intercept terms of those whose marriages are about to disrupt and those whose marriages remain intact are marginally different ($\alpha = .10$). If the shift term is then held constant, among white women there are significant (at the 5 percent level) differences in the duration of marriage and nonwage income coefficients between the two marital status subgroups [F ratio (2,1463) = 3.21]. For black

[18] See Stephen C. Myers, "Tests for Equality in Regressions of Weighted Data," mimeographed (Columbus: The Ohio State University, Center for Human Resource Research, 1976), pp. 1-13, for a discussion of the use of the technique in testing for equality of regression equations.

women there are no significant slope differences between the two groups.[19]

The fact that white disruptees do differ from their nondisrupting counterparts in the effect that the duration of their marriage and the level of nonwage income has on their annual hours worked is an interesting finding. It is also interesting to note that there are no structural differences between the two labor supply functions when all of the specified parameters are allowed to vary. The next question to be answered then becomes whether these slope differences are due to the maritally disrupting woman's anticipation of the event's occurrence or whether there is a fundamental difference in the taste for work between the two marital status groups.

In an effort to distinguish between these two possibilities, the labor supply model for disruptees was estimated for the survey point T - 1, with the assumption being that the farther away the young woman is from the disruption's occurrence, the less likelihood that the anticipation of the marital breakdown will be affecting her labor supply behavior. The summary statistics and regression results are given in Table 11. For whites, at T - 1 the duration of marriage variable does

[19] If α levels are lowered to 10 percent, for whites the coefficients on the presence of a youngest child less than two and the SMSA variables become significantly different between the disrupting and reference groups [F Ratio (4,1461) = 2.09]. For blacks, there is a slope difference in the "age of youngest child less than two" variable [F Ratio (1,1464) = 3.34].

Table 11

Summary Statistics and Regression Results:
Determinants of Annual Hours Worked for Marital Disruptees at T - 1 by Race[a]

Characteristics	Race			
	Whites		Blacks	
	Means[b]	Regr. Results[c,d]	Means	Regr. Results
Duration of Marriage	5.91	3.48	5.44	.91
	(4.66)	(0.26)	(4.36)	(0.04)
Age of Youngest Child < 2	.49	-954.03***	.72	-665.96***
	(.50)	(-7.87)	(.45)	(-2.89)
Age of Youngest Child ≥ 2	.09	-417.21**	.11	424.76
	(.29)	(-1.90)	(.31)	(1.20)
Nonwage Income	5829	-.009	4920	-.024
	(3388)	(-0.49)	(3117)	(-0.85)
Respondent's Health	.05	73.46	.05	270.39
	(.22)	(0.31)	(.22)	(0.72)
Potential Wage	1.54	453.2***	1.46	386.39*
	(.38)	(2.89)	(.36)	(1.28)
High Welfare State of Residence	.42	-7.17	.33	-46.82
	(.49)	(-0.06)	(.47)	(-0.21)
Low Welfare State of Residence	.22	103.00	.47	241.33
	(.42)	(0.73)	(.50)	(0.96)
Unemployment Rate (U.S.)	5.17	-39.26	5.18	-236.26*
	(.49)	(-0.36)	(.50)	(-1.42)
No. of Household Members over 18	.22	-18.88	.70	71.15
	(.67)	(-0.22)	(1.19)	(0.93)
SMSA Residence	.67	134.8	.68	286.53*
	(.47)	(1.13)	(.47)	(1.31)
Constant	-	795.44*	-	1633.8**
		(1.38)		(1.66)
Annual Hours Worked	858	-	786	
	(846)		(866)	
N	-	170	-	102
R^2 (adj.)	-	.37	-	.19
F Ratio	-	10.21***	-	3.09**

a Universe includes those young women who first disrupt between 1970 and 1973 and are not enrolled in school at T - 1.

b Summary means are unweighted; standard deviations are in parentheses.

c Regression results are unweighted; t statistics are in parentheses.

d Significance levels are for one-tailed tests except for the "duration of marriage" variable where significance levels are given for two-tailed tests.

*** Significant at 1 percent level.
** Significant at 5 percent level.
* Significant at 10 percent level.

become insignificant, while the nonwage income coefficient remains insignificant.[20]

There are several explanations for the fact that even at T - 1 the income coefficient remains insignificant in the labor supply model of those women whose marriages subsequently disrupt. One explanation is that measurement error exists in the construction of the nonwage income variable. A second alternative is that the nonwage income component is proxying for a positive taste for work among those whose marriages later break down. Third, the possibility continues to exist that anticipation of the disruption's occurrence can be found even at the second survey before it actually occurs. In this case, the wife discounts her husband's earnings in making her labor supply decision because she is aware that there is a high probability that they will separate.

The first explanation, that of measurement error in the nonwage income variable, has credibility only if there is some reason why those women who are about to undergo a marital disruption are more likely to give incorrect information on the income and asset questions than do those who are maritally stable. Since unexpected alterations in family

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[20] In order further to test the stability of these results, the change in annual hours worked between T and T + 2 was regressed on the changes in nonwage income, changes in potential wages, and changes in other control variables over the same period. For both races income effects remain insignificant and the models themselves are insignificant (whites, F ratio = 1.35; blacks, F ratio = .55).

income have been shown to promote marital instability, it may be possible that women whose marriages are about to dissolve are less likely to know their husband's income.[21]

The 1972 N.L.S. data set, incorporating a series of work attitude questions, does permit a simple test of differences in tastes for work between a group of white women whose marriages are about to dissolve and a maritally stable sample of white women. Table 12 gives the results obtained in the 1972 survey when attitude responses of a sample of married women who disrupt between 1972 and 1973 are compared with a sample of married women who do not disrupt between 1968 and 1975. These results give some support for the notion of differences in tastes for work among the two marital status subgroups, even before the marital disruption occurs. Unfortunately the sample size for the maritally disrupting group is very small, keeping significance levels low. However, it must be acknowledged that because the results obtained for the disrupting group are taken from the survey period immediately before the disruption takes place, these results may indicate attitude changes due to anticipation of the disruption's occurrence, rather than representing taste factors.[22]

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[21] See Ross and Sawhill, Time of Transition, pp. 59-60.

[22] The responses on the 1972 survey's attitude questions by those who disrupted between 1973 and 1975 were also compared with the same maritally stable group in an effort to see whether these attitude differences are also apparent at surveys taken before the point T, i.e. at T - 1 and T - 2. Although the results are in the same direction as in Table 12, the results are not significant.

Table 12

Proportion of White Women with Positive Responses
on Work Attitude Questions by Marital Status in 1972

Attitude Statement[e]	Marital Status				
	Disrupt 72-73[a]		Maritally Stable 72[b]		T test for differences[f]
	N	$\bar{X}$[d]	N	$\bar{X}$	
A working wife feels more useful than one who doesn't hold a job	60	56	3335	44	1.84**
Employment of both parents is necessary to keep up with the high cost of living	60	57	3835	48	1.39*

[a] Universe includes those women married with a spouse present in 1972 who undergo a marital disruption between 1972 and 1973.

[b] Universe includes those women married with a spouse present in 1972 who do not undergo a marital disruption between 1968 and 197 .[e]

[c] N represents the unweighted sample size.

[d] $\bar{X}$ represents the weighted proportion of the sample indicating agreement with the attitude statements (agree, strongly agree)

[e] These are two of a series of nine statements used to examine the respondent's opinion about the employment of wives.

[f] Significance levels are for one-tailed tests.

*** Significant at 1 percent level.

** Significant at 5 percent level.

* Significant at 10 percent level.

The third possible explanation for the nonsignificance of the income effects among white women in the predisruption periods T and T - 1 is the phenomenon of anticipation. It may be that the survey point T - 1 is still sufficiently close to the disruption's actual occurrence that anticipation of the disruption continues to be a factor in the determination of the woman's labor market behavior.

One way to test the validity of this thesis is to examine the ability of labor supply parameter estimates for the subset of maritally stable women to predict the increase in mean annual hours worked that occurs for the disruptees between the pre- and postdisruption periods, given changes in the mean values of the independent variables. By plugging in the mean values of the independent variables at T + 2, the labor supply model for maritally stable women can explain 83 percent of the actual increase in the labor supply of the disruptees that is observed between points T and T + 2.[23] According to the results obtained, the most important factors accounting for the increase in labor supply are the decline in nonwage income and the decline in the proportion of women with an infant (age less than 2) in the household. The fact that the predicted mean annual hours of work is relatively

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[23] To obtain these results the labor supply parameter estimates for maritally stable women are multiplied by the mean values of the parameters for the disruptee sample in the postdisruption period, i.e.

$b^{T}_{i_{MSP}} \bar{X}^{T+2}_{i_{DIS}}$, where DIS = maritally disrupting
MSP = maritally stable
b = slope coefficient
$\bar{X}$ = mean value of independent variable, i.

close to the actual mean annual hours of work does indicate that survey points T - 1 and T do, in fact, represent transition points in the disruption cycle. If this were not true, the expectation would be that the parameter estimates for the maritally intact sample would have no ability to predict the behavior of the sample of maritally disrupted women.

Unlike the case of white women, income effects are insignificant at point T for both blacks whose marriages disrupt and those whose marriages remain intact. At point T - 1 there is no difference in the significance of the income effects for either group. Given the fact that analysis of variance tests do not indicate any significant differences in either the slope or intercept terms of the models for the two marital status subsets, these results are not surprising.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Between 1950 and 1974, the number of female-headed families in the United States has grown at a rate almost ten times that of two-parent families. The increase has been particularly pronounced after 1970; between 1970 and 1973 the number of families headed by women grew by one million, an increase exceeding the net growth over the previous decade, 1960-1970.[1] The most important reason for this growth is the increase in marital instability, particularly among young women with children, that occurred over the same period.[2] Under fairly conservative assumptions, such a growth rate has led Glick and Norton to predict in 1975 that at least one-third of the first marriages of couples under 30 years of age would eventually end in divorce.[3]

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[1] U.S. Bureau of the Census, Current Population Reports, "Household and Family Characteristics, March 1973," Series P-20, No. 258 (Washington, D.C.: U.S. Government Printing Office, 1973), pp. 1-9.

[2] Michael provides support for this finding in his analysis of vital statistics data from 15 states in the Divorce Registration Area. He concludes that the acceleration of divorce rates in the late 1960s is attributable to increased divorces among women in their twenties and early thirties. The sustained rise in the early 1970s also is attributable to increased divorce among young women. See Robert T. Michael, "The Rise in Divorce Rates, 1960-1974: Age-Specific Components," Demography 15, no. 2 (May 1978): 177-82.

[3] Hugh Carter and Paul Glick, Marriage and Divorce: A Social and Economic Study (Cambridge: Harvard University Press, 1976), pp. 396-97.

The occurrence of a marital disruption in a family greatly increases the probability that total family income will fall below "poverty." In 1969, 47 percent of all poor families with children were headed by women. In the same year, median income of female-headed families with children was $4,000, contrasting with a median income of $11,600 for two-parent families with children.[4]

This study has made an intensive analysis of the impact of marital dissolution on the economic status and the labor market activity of young women in their twenties. The findings are consistent with the overall data described above. Among white women whose family incomes were above poverty in the period immediately preceding divorce or separation, 25 percent had below-poverty family incomes in the post-disruption period. For black disruptees who were above the poverty line in the predisruption period, 40 percent fell below the poverty income ceiling following the marital disruption. Although the labor market activity of the woman increases as a result of the separation or divorce, the family still suffers a substantial net income loss.

A major reason for this phenomenon is the low potential earning power of the disrupted woman. Among the sample of white disruptees, 38 percent had failed to complete high school, as compared with only 21 percent of their counterparts whose marriages were stable. Among blacks, the differential is similar. High school dropouts constitute

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[4] See Robert L. Stein, "Economic Status," pp. 5-6. Poverty thresholds are defined according to the standard definitions of poverty as published by the C.P.S.

56 percent of the black disruptees but only 35 percent of the reference group. Expected market wage rates correspondingly are lower for women whose marriages break up. As a consequence, the total income available to the family may in many cases be insufficient to keep the family out of poverty, even if the woman works full-time.

A second reason for the high incidence of poverty among female-headed households, is the absence of income sources other than their own labor. For most of these young women, financial assistance through such sources as alimony, child support, and relatives is low, if it exists at all. Almost fifty percent of the disrupted women in this study had zero nonwage incomes in the postdisruption period.

The low potential earning power of such women, particularly those with children, and the absence of alternative sources of financial support mean that benefits available through public transfer programs such as AFDC become an attractive possibility. Ross and Sawhill found that 27 percent of the increase in the AFDC caseload between 1967 and 1971 was due to the increased numbers of female-headed families with children.[5] The present study reveals a similar pattern. Between the pre- and postdisruption periods, there are sharp increases in the proportion of disruptees reporting that a member of their family has received some form of public assistance during the previous year. Among white disruptees, this increase amounted to 22 percentage points while for blacks, the increase was 35 percentage points. Of those families

[5]See Ross and Sawhill, Time of Transition, pp. 104-06.

who received public assistance during the postdisruption period, only 6 percent of the white and 13 percent of the black sample were also receiving such assistance prior to the separation or divorce.

The multivariate analysis of the factors affecting labor supply indicates that the number of hours spent in employment is positively related to the level of the expected market wage, and that this relationship becomes stronger after a marital disruption than it had been previously. For both white and black women one of the effects of a marital disruption is to make annual hours worked more responsive to a variation in the expected market wage rate, which is primarily a function of the respondent's level of education. Thus, increased education has a substantial impact on the young woman's ability to increase her work activity in response to the occurrence of a marital disruption and the resultant change in her financial circumstances. For example, white disrupted women who have not graduated from high school work 27 percent fewer hours than those who have completed high school. Among black disruptees, dropouts actually work 54 percent fewer hours than high school graduates. The fact that this differential is greater among blacks indicates that raising potential earning power is particularly important for this racial group.

Given the fact that separation and divorce rates are expected to continue at high levels, this finding points out the importance of convincing young women of the need to secure at least a high school diploma before leaving school. Such a finding also suggests that any welfare

policy that alters the implicit tax rate on earnings will have a very significant impact on the labor supplied by women who are heads of household.

On the other hand, the effect of a marital disruption is to reduce, at least for white women, the responsiveness of annual hours worked to the presence of a child in the household. The departure of the husband from the family unit generally eliminates for the woman the option of concentrating on nonmarket production, regardless of whether there is a child present. In this respect, an interesting finding is that disruptees with a child over 2 years of age actually work more hours than those without children. This result is particularly noteworthy given the expectation that child care and other costs associated with the women working may well rise with the loss of one parent.

Confirmation of the attractiveness of public transfer payments for the woman with low potential earnings is seen in the significant response of annual hours worked by disruptees with low levels of education to the welfare variables. White disruptees who do not have a high school diploma offer fewer hours of work if they live in states with high benefits and easy access to those benefits than if they reside in states where welfare benefits are less liberal.

The most puzzling result is the failure of the amount of labor supplied by disruptees to respond to variations in nonwage income. While the expected inverse relation between work intensity and nonwage income prevails for women whose marriages have been stable, it does not

for those who have been separated or divorced. For the sample of disruptees in the postdisruption period ("T + 2") the relation between work intensity and income is actually positive. Moreover, even when this relationship is examined in the predisruption periods ("T" and "T - 1"), one finds that for both races the adjusted effect of nonwage income on labor supply, while having the expected negative sign, is not significant. This result, at least for whites, is in sharp contrast to the result obtained for their counterparts whose marriages remained intact.

There are several possible explanations for this latter finding of insignificant income effects in the predisruption period. One obvious possibility is that the woman whose marriage is beginning to fall apart anticipates her husband's departure and therefore disregards the level of his earnings in deciding the extent of her participation in the labor force. This explanation is somewhat suspect, however, by virtue of the fact that the phenomenon is discernable as long as two years before the actual disruption takes place.

A second possibility is that the difference in income effect between the two marital status groups is proxying for differences between them in the taste for work. If above average work activity increases the probability that a disruption in the marriage will occur, then the sample of disruptees may represent a set of career committed women who would be working regardless how much their husbands were earning. However, there is also reason for doubting this explanation, since aside from nonwage income, the other determinants of labor supply do not

differ significantly at T - 1 between the two marital status groups. It is not clear why such a "taste for work" effect should be manifested through the nonwage income variable rather than any of the other variables included in the labor supply function.

A third possible explanation is the existence of error in the measurement of nonwage income levels for those white women whose marriages subsequently break up. This explanation has credibility only if a case can be made for the possibility that women in such positions do not know how much their husbands are earning. Since there is no empirical evidence to indicate that this is in fact true, the author is inclined to dismiss such an explanation.

The available data do not offer an unambiguous test of the validity of these alternative explanations. Nevertheless, the evidence that has been adduced leads the author to accept the anticipation phenomenon as being the most likely alternative. If this explanation is correct, it leads to the obvious conclusion that young women whose marriages break down are not caught totally by surprise by the event; before the actual disruption, they are already discounting their husband's earnings in making their labor supply decisions. Moreover, this conclusion also suggests that the comparison that has been made in this study of labor supply determinants immediately before and shortly after a marital disruption understates the event's impact. The adjustment to an unmarried status with its corresponding effects on labor market behavior may be a gradual one, beginning a substantial amount of time before the husband physically leaves the household.

Additional surveys of the young women's cohort within the N.L.S. will increase the size of the sample of women who have experienced at least one separation or divorce. The increased sample size will allow closer scrutiny of predisruption labor supply behavior and will also permit examination of the longer-run implications for the labor market choices of those remaining in a disrupted status. Moreover, as these young women reach their middle thirties, it will be possible to compare their employment behavior with that of the mature women's cohort (aged 30 to 44 in 1967) at the same time. It is hoped that in the future the measures of nonwage income and of public assistance receipt will be improved, permitting more accurate estimations of labor supply functions, particularly in the postdisruption period.

From a methodological perspective, this study points out the need for additional refinements, despite the abundance of research that has already been done on labor supply functions of various population groups. For one thing, the need for better techniques for analyzing longitudinal data has been clearly illustrated. Second, the fact that a large proportion of women are not in the labor force continues to present methodological problems, since the proper measure of the expected market wage and labor supply for such women are still unsettled issues. Finally, the finding that public assistance receipt is an important financial option for female-headed families suggests that more attention must be given to modelling the probability of its receipt in the labor supply function.

APPENDIX A

SAMPLE SELECTIVITY: THOSE WHO REMARRY

As is briefly discussed in Chapter II, those women who remarry by the second survey after the disruption occurs are excluded from the estimates of postdisruption (T + 2) labor supply. The extent to which the results obtained from this study can be generalized to all disrupting women is affected by the selectivity of the sample. For this reason, it is important to examine the predisruption socio-economic characteristics and labor supply behavior of the remarried women to see whether they differ significantly from the characteristics and behavior of other women who also maritally disrupt but do not remarry by T + 2.[1]

There are a total of 129 women out of the sample of 519 young women who have remarried by T + 2. Of these remarried women, 95 are white and 34 are black. Thus, about 32 percent of the sample of white women has remarried by T + 2, while 16 percent of the black sample has done the same.[2]

Table 13 compares certain predisruption (at time T) socioeconomic characteristics of those who remarry by T + 2 with those who do not.

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[1]This study does not propose to deal with the obvious possibility that some members of this group who have not remarried will remarry after T + 2. This fact should make it more difficult to find significant differences between the two groups.

[2]The small sample of black remarriers makes any comparisons with non-remarriers somewhat suspect. However, the decision was made to include the results because there did appear to be some distinct differences.

Table 13

Comparison of Socioeconomic Characteristics in the Predisruption Period (T) by Remarriage Status and Race[a]

Characteristic	Whites		Blacks	
	Remarriage	No remarriage	Remarriage	No remarriage
Work-Related				
Mean Annual Hours Worked	960	799	642	924
% Working Zero Hours	14.5	25.0	27.5	28.2
% with Potential Wage < $1.00	4.9	3.0	22.7	8.5
Income-Asset				
% with Family Income < $4000	35.5	25.3	70.9	43.6
% with Husband's Earnings < $4000	42.6	30.2	79.5	44.7
% Receiving Public Assistance	5.2	6.4	31.7	18.0
Family-Related				
% with No Children	55.0	36.3	16.4	18.3
% with Child less than 2	31.0	37.1	53.1	57.3
% with 2 Children or more	18.5	27.4	48.8	43.6

[a] Remarriage status is determined by whether or not a woman who undergoes a marital disruption has remarried, i.e., is again in a married spouse present status by T + 2. All figures are weighted.

Certain distinct differences can be noted between the two groups. Among whites, those who remarry quickly have lower expected wages, lower family incomes and lower husband's earnings than those who do not. Correspondingly, they work longer mean hours and are slightly less likely to be receiving public assistance benefits. The black remarriers, although a very small group, are very distinct from their counterparts who do not remarry. They are almost twice as likely to be receiving public assistance at some point during the previous year and to have a husband with earnings under $4,000. Their expected wages and mean annual hours worked are substantially lower while there is little difference in the percentage of women who are childless.

To conclude, it appears that the black remarriers constitute a more selected sample than white women who remarry. For white disruptees, although there are distinct differences by remarriage status, the differences do not appear so great as to create a significant bias by excluding this group at T + 2. On the other hand, the remarrying sample of blacks has socioeconomic characteristics which are substantially different from the nonremarriers. Since, however, the percentage of black disruptees who remarry is very small, the exclusion of this group in the postdisruption analysis is assumed not to create a significant selectivity bias.

APPENDIX B

DESCRIPTION OF VARIABLE CONSTRUCTION

Annual Hours Worked: The National Longitudinal Surveys for the cohort of young women are not consistent throughout all survey years (1968 to 1975) in the work history information provided. In three of the survey years (1968, 1969, and 1975) the respondent was not asked to provide a complete account of her work history since the previous interview. Instead, she was asked her usual hours worked at her current or last job and her total weeks worked during the past 12 months. The respondent's annual hours of work in these years then becomes the product of these two variables.

In the four other survey years (1970 to 1973), the respondent was asked to give a detailed account of her labor market activity for each week since the previous interview. In these years the respondent's annual hours worked represents the sum of the products of the weeks worked at each job and the usual hours worked on that job since the last interview. This sum is then adjusted to a 12 month base in order to take account of the differences in the amount of time between interview dates.

The result of such a procedure is that in the 1970 to 1973 survey years, the dependent variable represents a more refined measure than in the years, 1968, 1969, and 1975. However, since no one can recall with complete accuracy hours worked over the entire year, the work history measure of actual hours worked also contains an error term. Therefore, it is hoped that the use of different measures for different years, although a source of bias, provides a more accurate measure

than has been found in most recent labor supply literature.[1]

Expected Wage Rate: The natural logarithm of actual hourly earnings on current job is hypothesized to be a function of the respondent's education, SMSA/nonSMSA residence, South/nonSouth residence and her health status (self-reported). In the first stage, expected wage estimates are obtained using the above functional relationship and a sample of women (regardless of marital status) currently in the labor force. The coefficients, t statistics, sample sizes, and R^2 of the estimating equations for each year by race are given on Table 14.

An expected wage for each respondent, regardless of her labor force status, is then constructed using the above parameter estimates. The expected wage obtained is standardized in 1967 dollars and is converted from log to arithmetic form.

Non-wage Income: As was mentioned in the text, in the predisruption period, nonwage income is the sum of the husband's earnings (whether wage, salary or self-employment income), his asset income

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[1] See Steven H. Sandell and Peter Koenig, "Measurement Error and Its Consequences: The Case of Annual Hours of Work," mimeographed (Columbus: The Ohio State University, Center for Human Resource Research, 1977); and Anthony Yezer, "Evaluating Methods of Estimating Annual Hours Worked," American Statistical Association, 1977 Conference Proceedings of the Business and Economic Statistics Section, vol. I, pp. 664-67, for a discussion of the biases engendered by the use of an annual hours of work measure consisting of the product of weeks worked during the past year and hours worked in the survey week immediately preceding the survey week.

Table 14

Potential Wage Regression Coefficients by Year and Race[a,b]

Variable	Whites													
	1968		1969		1970		1971		1972		1973		1975	
	Coeff.	t[g]	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
Education[c]	.15470	27.94	.14663	25.34	.099861	18.64	.09374	16.62	.077346	15.04	.07133	14.10	.050998	10.32
SMSA[d]	.099239	4.22	.12509	5.32	.15978	7.43	.13125	5.78	.15449	7.10	.12680	5.86	.17372	7.84
South[e]	-.0097307	-0.38	-.015708	-0.63	-.021288	-0.94	-.027036	-1.16	-.020291	-0.92	-.075111	-3.40	-.057985	-2.61
Health[f]	.013896	0.27	-.054315	-0.62	-.099425	-1.95	-.02907	-0.56	-.0044629	-0.06	-.061109	-1.42	-.077815	-1.43
Constant	3.1436	46.68	3.3161	45.85	3.978	58.83	4.1569	57.19	4.4135	65.33	4.6018	68.79	5.0132	74.83
R^2 (adj)	.37		.32		.22		.19		.16		.16		.13	
N	1379		1501		1558		1540		1557		1561		1299	

Variable	Blacks													
	1968		1969		1970		1971		1972		1973		1975	
	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
Education	.099797	10.13	.098750	10.50	.089796	11.11	.068982	18.47	.072843	8.80	.060114	9.59	.074852	11.25
SMSA	.14840	3.37	.11270	2.76	.091237	2.47	.10886	2.87	.16692	4.36	.11863	3.80	.15294	4.65
South	-.21598	-5.29	-.24566	-6.55	-.29093	-8.94	-.23253	-6.93	-.22163	-6.51	-.24256	-8.61	-.23652	-8.00
Health	.060207	0.75	.087353	0.44	-.072266	-0.72	-.032979	-0.36	-.34136	-1.57	-.098854	-1.59	-.26972	-3.58
Constant	3.8594	31.88	4.0143	35.54	4.2616	42.85	4.54	43.79	4.5169	42.28	4.8113	58.75	4.8050	52.40
R^2 (adj)	.30		.30		.35		.24		.25		.30		.36	
N	415		491		512		548		551		600		541	

a The sample universe is all women who are currently employed and who are receiving a wage or a salary, i.e., not self-employed.
b The dependent variable is the natural logarithm of the wage on the respondent's current job; the regression is run unweighted.
c Highest grade completed.
d See description of the variable in this appendix.
e A dummy variable with a one given to a respondent living in the South, as defined by the Census and zero, otherwise.
f See description of the variable in this appendix.
g t-statistic

(including rental income receipts and interest and dividend income), unemployment compensation received by the husband, the respondent's asset income (including rental, interest, and dividend income), the income of other family members, and financial assistance from relatives. In the postdisruption period, nonwage income components remain the same, save the obvious exclusion of all income, both earned and unearned, on the part of the husband. Nonwage income values are standardized in 1967 dollars.

Although detailed information on the respondent's asset position is available in certain surveys (1968 and 1971-1973), the fact that no such information was available for the other survey years meant the alternative use of a net asset variable was not possible. In addition, the nonwage income variable initially had a high nonresponse rate because any respondent who did not answer any portion of the income questions was given a nonresponse on the summary variable, "total family income," as well. For the purposes of this study, in order to minimize this nonresponse rate, a zero is imputed to any nonwage income component (other than husband's or wife's wage and salary income) where there was a nonresponse.

There are other problems with the income questions in the survey instrument, particularly when applied to a household where the husband and wife do not live alone. In this case, the respondent is asked to give the total household income, not that portion from which she and her husband (if any) derive their income. There is no way of knowing, therefore, what income components she is including in her answer nor

how accurate her information is. In addition, there is no way of knowing whether she is including transfer payments in her response. To magnify the problem, in the survey instrument her response is categorized into one of eleven income categories, with the high income category lumping incomes of $25,000 or above. In order that this categorical income measure for the extended family setting be comparable to the continuous income measure where the couple or single individual lives alone, it was necessary to assume a mid-point value of family income for each category with the highest level of income being arbitrarily set at $26,000.

A summary then of the possible sources of bias in the construction of this variable is as follows:

(1) Understatement of income due to imputation of zero income where a nonresponse is noted.

(2) Possible inclusion of wage-related transfer payments in the nonwage income measure of those respondents living in extended families.

(3) Understatement or overstatement of family incomes of those living in extended families due to the necessity of taking a mid-point figure in order to derive a continuous measure from a categorical one.

(4) The lack of information on the asset position of the respondent which might significantly alter nonwage income levels.

Access to Welfare: For the purposes of this study, the probability of the receipt of welfare in a given state is assumed to be a function of the level of AFDC (Aid for Families of Dependent Children) payments per recipient in that state and the proportion of the eligible population actually receiving such AFDC benefits. Those states which have above the mean levels (among all states) on both of these factors are classified as "high welfare" states, and those with below mean levels on both of these factors are classified as "low welfare" states. Those states falling outside these two categories constitute the reference group. Two dummy variables were then constructed, a "high welfare state of residence" variable with a one given to a respondent living in such a high welfare state and zero, otherwise and a "low welfare state of residence" variable with one given to a respondent living in a low welfare state and zero, otherwise.

In order to be able to rank states according to the above described criteria, the following procedure was used. Data on average payments per recipient by state were obtained from Social Security Administration statistics. For years 1968 to 1970, 1969 figures were used, for years 1971 to 1975, 1974 figures were used.[2] The construction

[2]For years 1968 to 1970, see Social Security Bulletin, Social Security Administration, U.S. Department of H.E.W., vol. 32, no. 4 (April 1969), Table M-24, p. 64. For years 1971 to 1975, see Social Security Bulletin, Social Security Administration, U.S. Department of H.E.W., vol. 37, no. 6 (June 1974), Table M-27, p. 48.

of figures giving the percentage of eligibles actually receiving AFDC was more complicated. From 1970 Bureau of the Census data, figures were obtained on the number of children under 18 years of age residing in families below specified low income ceilings.[3] Figures on the number of children receiving public assistance by state also were obtained from Bureau of Census data. For the years of 1968 to 1970, 1968 data were used; for the years of 1971 to 1975, 1973 data were used.[4] By dividing the number of children receiving AFDC by the total number of eligible children, one obtains the measure of welfare access used in this study.

Other Adult Family Members: This variable is constructed from the household record, where all persons over 18, except the spouse (if any), are counted.

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[3]For all years, data on the eligible population by state were taken from "Table 1: Census Regions, Divisions and States" (cols. 64 x 65), County and City Data Book: 1972, United States Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, p. 5.

[4]For the years 1968 to 1970, data were taken from "No. 435: Public Assistance - Recipients of Money Payments, States and Other Areas: 1968," Statistical Abstract of the United States, United States Department of Commerce, Bureau of the Census, (Washington, D.C.: United States Government Printing Office, 1969), p. 297. For the years 1971 to 1975, data were taken from "No. 472: Public Assistance - Recipients of Money Payments, States and Other Areas: 1970, 1972, and 1973," Statistical Abstract of the United States, United States Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, (Washington, D.C.: United States Government Printing Office, 1974), p. 298.

Age of the Youngest Child: Those respondents having an infant (aged 0 or 1) have a value of one on the dummy variable, "low age of youngest child." If the age of the respondent's youngest child is between 2 and 20, they have a value of one on the dummy variable, "age of youngest child $\geq$ 2." The reference group are childless individuals.

Duration of Marriage: Duration of marriage is a continuous variable measured in six month units. Unfortunately, due to the lack of data on the precise date of marriage, the variable is necessarily imprecise. A recent version, however, does reflect a thorough review of the household records of all respondents. Accordingly, this revised variable is somewhat more accurate than what was previously available.

Health Status: This is a dummy variable with a one given to any respondent who says her health or physical condition limits her activities or the kind of work that she can do, and a zero, otherwise. In two survey years, such a question is not asked. In these years, therefore, a value of one is given if the respondent indicated such a health condition existed in the preceding and following survey years.

SMSA/nonSMSA Residence: This variable is constructed from environmental information available on the respondent's residence. If the respondent lives in the central city or surrounding metropolitan area, this variable has a value of one, with a zero given to rural residence.

Cyclical Economic Factors: This variable is continuous reflecting the U.S. female unemployment rate in the relevant year being measured.

Unemployment rates are obtained from the Bureau of Labor Statistics, Department of Labor.

Total Marital Status: This is a dummy variable with a one given to a woman whose marriage disrupts between 1969 and 1973, and a zero given to any woman who is married with a spouse present in the household in 1971 and whose marriage does not disrupt between 1968 and 1975.

APPENDIX C

APPROPRIATE TESTS FOR COEFFICIENT DIFFERENCES IN LABOR SUPPLY FUNCTIONS ACROSS TIME

In order to be able to test for equality among regressions or subsets of these regressions, one of the fundamental assumptions is that the disturbance terms are uncorrelated, i.e., where $V(\varepsilon) = \sigma^2 I$. This study compares cross-sectional labor supply functions for approximately the same sample of women at two points in time. Therefore, it is unrealistic to assume that the disturbance terms of these two regression equations will not be correlated. Instead it is plausible to assume that successive disturbances are positively correlated, with only the correlation of more distant disturbances close to zero.

One alternative is to ignore the nonzero correlation of the residual and to use the least squares estimating procedure. As Theil describes, the estimated coefficient, $\hat{\beta}$, is unbiased but the least squares variance expression [the relevant diagonal element of $\sigma^2 (X'X)^{-1}$] underestimates the actual variability of the estimator. In addition, this least squares variance is biased, because there is additional understatement when $\hat{\sigma}^2$ replaces σ^2 in the estimate of least squares variance $\sigma^2(X'X)^{-1}$.[1]

A second alternative is to employ a technique developed by Nerlove and others to analyze time series data on cross sections. As Nerlove points out, when numerous individuals are observed over time, it is

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[1] This result is predicated on the presumption that large values of the explanatory variable are followed by other large values and likewise for small values. See Henri Theil, Principles of Econometrics, (New York: John Wiley and Sons, 1971), pp. 255-56.

difficult to specify the stochastic nature of the disturbance term since it will include both an individual effect which is invariant over time, μ_i, and an effect which varies over time and individuals, γ_i. He concludes that the best estimation procedure in such a case is a "two-round" procedure where first the value of ρ (an intraclass correlation coefficient = σ_μ^2/σ^2) is estimated and second, the model is estimated by least squares after the dependent and independent variables are transformed by ρ.[2] Unfortunately, the computer software package requires that every individual must have data for the same number of time periods.[3] In this study, there are some individuals for whom data are limited to a single period. For example, those women whose marriages break down but who were not married at T are not included in the labor supply estimates at T. Those women who are remarried by T + 2 are excluded from consideration in the postdisruption period.

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[2]See Marc Nerlove, "Further Evidence on the Estimation of Dynamic Economic Relations from a Time Series of Cross-Sections," Econometrica 39, no. 2 (March 1971): 359-82.

[3]See Neil W. Henry, John F. McDonald, and Houston H. Stokes, "The Estimation of Dynamic Economic Relations from a Times Series of Cross-sections: A Programming Modification," The Annals of Economic and Social Measurement 5, no. 1 (1976): 153-55.

In order to be able to perform any tests for equality of coefficients across regressions, it was necessary to use tests for significance that did not require the least squares assumptions. Two alternative testing procedures were used, one by estimating 5 percent confidence limits for the parameter estimates at T and two, by performing a t test for coefficient differences under the alternative assumptions of zero correlation or a correlation of one between the parameters at T and T + 2. Table 15 gives the results of the alternative testing procedures.

The t statistic computed to test for the equality of coefficients has the following form

$$t_{T+2,T} = \frac{\hat{\beta}_{i_{T+2}} - \hat{\beta}_{i_T}}{\sqrt{\hat{\sigma}^2_{i_{T+2}} + \hat{\sigma}^2_{i_T} - 2\hat{\sigma}_{i_{T+2,T}}}} \qquad \text{where } i=1....10 \qquad (1)$$

Since the correlation coefficient is defined as

$$\rho_{i_{T+2,T}} = \frac{\hat{\sigma}_{i_{T+2,T}}}{\hat{\sigma}^2_{i_{T+2}} \; \hat{\sigma}^2_{i_T}} \qquad , \qquad (2)$$

it can be substituted into equation (1) to obtain the t statistic

$$t_{T+2,T} = \frac{\hat{\beta}_{i_{T+2}} - \hat{\beta}_{i_T}}{\sqrt{\hat{\sigma}^2_{i_{T+2}} + \hat{\sigma}^2_{i_T} - 2\,\rho_{i_{T+2,T}} \sqrt{\hat{\sigma}^2_{i_{T+2}} \; \hat{\sigma}^2_{i_T}}}} \; . \qquad (3)$$

Table 15

Confidence Intervals and Tests for Equality of Coefficients in the Pre- and Postdisruption Periods (T and T + 2) by Race

Characteristic	Race					
	Whites			Blacks		
	Confidence Interval[a]	Test for Equality of Coefficients[b]		Confidence Interval	Test for Equality of Coefficients	
		$\rho = 0$	$\rho = 1$		$\rho = 0$	$\rho = 1$
Duration of Marriage	+2.04,+44.16[c]	1.39*	10.56***	-13.81,+46.17	.074	.74
Age of Youngest Child < 2	-1065,-653[c]	2.25***	5.50***	-556,+95	.14	.14
Age of Youngest Child ≥ 2	-1014,-356[c]	3.71***	44.14***	-350,+624	.96	6.12***
Nonwage Income	-.031,+.021	.06	.36	-.058,+.024[c]	1.58*	4.21***
Respondent's Health	-573,+173	.46	2.79***	-951,+100	.04	.25
Potential Wage	+201,+759[c]	.99	2.24**	+138,+1060[c]	1.62*	26.36***
High Welfare State of Res.	-240,+192	.04	.12	-344,+320	.07	1.14
Low Welfare State of Res.	-177,+280[c]	1.60*	4.44***	-56,+649	.49	52.52***
Unemployment Rate (U.S.)	-167,+63	.26	.78	-201,+93	.73	3.89
No. of Household Members over 18	-178,+106	.33	2.43***	-213,+35	.17	.64
SMSA Residence	-403,+15	.45	.40	-182,+459[c]	1.61	16.36***
Constant	+190,+1534	.71	1.34*	-747,+1219	.43	1.66**

[a] Computed from the formula, $\hat{\beta}_{i_T} \pm 1.96\,\hat{\sigma}_{i_T}$

[b] See text; significance levels are for one-tailed tests.

[c] Indicates that $\hat{\beta}_{T+2}$ falls outside of the specified confidence interval.

*** Significant at 1 percent level.
** Significant at 5 percent level.
* Significant at 10 percent level.

The t test can then be computed under the alternative assumptions of $\rho_{i_{T+2,T}} = 0$ and $\rho_{i_{T+2,T}} = 1$.

Obviously both of these tests present second-best solutions. If the coefficient estimates at T + 2 are found to be outside the confidence interval and if the t statistics computed under the alternative assumptions of $\rho = 0$ and $\rho = 1$ are both significant, then a strong case can be made for rejection of the null hypothesis of no differences. In the case of most of the parameters this consistency of results is obtained. However, in the case of some explanatory variables, the results are ambiguous (as can be seen in the table) with no effective means of providing a definitive answer. In these cases, an arbitrary decision was made to take the results of the confidence interval estimates as the final arbiter.

APPENDIX D

ESTIMATION OF LABOR SUPPLY RESPONSE WITH TRUNCATION OF THE DEPENDENT VARIABLE

Truncation of the dependent variable is clearly a problem if a substantial proportion of the sample consists of nonparticipants in the labor force. At point T, 23 percent of white women whose marriages are about to break down and 29 percent of like black women have no work hours over the previous 12 months. For those women whose marriages remain intact, the percentages of nonparticipants are even higher, 40 percent for whites and 31 percent for blacks. Even at time T + 2 in the postdisruption period, 16 percent of white disruptees and 28 percent of black disruptees had no hours of work.

In order to be able to include such nonparticipants, it was important to explore the Tobit estimation technique which takes account of such a concentration of observations at the limiting value. Regression approximates this nonlinear distribution of the dependent variable with a linear relation. Over the central range of values for the sample, regression analysis should give close approximations to the expected value estimates obtained with Tobit. It is outside the central range where large discrepancies appear.

Running the predisruption labor supply models for white and black disruptees as well as the labor supply models for those whose marriages remain intact and using Tobin's estimation procedure yields very similar coefficient estimates to those obtained using ordinary least squares (see Table 16). On the other hand, as expected, the constant terms are quite different.[1]

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[1]See James Tobin, "Estimation of Relationships for Limited Dependent Variables," Econometrica 26, no. 1 (January 1958): 24-36.

Table 16

TOBIT Results: Determinants of Annual Hours Worked in the Predisruption Period (T) by Race and Prospective Marital Status

(t statistics are in parentheses)

Characteristic[4]	RACE			
	WHITES		BLACKS	
	Disruptees[2]	Reference Group[3]	Disruptees	Reference Group
Duration of Marriage	18.61*[5] (1.72)	-4.57 (0.78)	16.42 (1.09)	19.89* (1.88)
Age of Youngest Child < 2	-830.00*** (-7.47)	-923.25*** (-15.54)	-249.74* (-1.53)	-640.98*** (-5.47)
Age of Youngest Child ≥ 2	-577.28*** (-3.42)	-534.09*** (-6.41)	148.39 (0.62)	-148.71 (-0.93)
Nonwage Income	-.005 (-0.39)	-.041 (-5.89)	-.013 (-0.64)	.01 (0.65)
Respondent's Health	-225.78 (-1.15)	-130.56* (-1.36)	-334.24* (-1.23)	-845.92*** (-3.39)
Potential Wage	484.31*** (3.41)	385.90*** (5.40)	597.75*** (2.54)	386.62*** (2.16)
High Welfare State of Res.	-3.85 (-0.35)	-10.48 (-0.19)	-36.00 (0.22)	-117.65 (-0.79)
Low Welfare State of Res.	61.95 (0.53)	90.10** (1.55)	248.43* (1.39)	99.47 (0.70)
No. of Household Members over 18	-17.53 (-0.25)	-33.41* (-1.26)	-103.57* (-1.58)	-85.42** (-1.84)
SMSA Residence	-220.41 (2.06)	-98.87 (-1.90)	152.15 (0.94)	13.96 (0.11)
Constant	723.04** (2.08)	527.07*** (3.79)	4.65 (0.01)	113.80 (0.33)
N	235	1238	161	295

continued next page

Table 16 continued

[1]The Tobit results presented are the expected value estimates of the coefficients.

[2]The sample of disruptees includes those who experience a first marital disruption, either separation or divorce, between 1969 and 1973 and who are not enrolled in school.

[3]The reference group consists of women married in 1971 who do not experience a marital disruption between 1968 and 1975 and who are not enrolled in school.

[4]For a complete description of the construction of the characteristics, see Appendix B.

[5]Significance levels are given for one tailed tests except for the "duration of marriage" variable which is given for a two-tailed test.
***Significant at 1% level
**Significant at 5% level
*Significant at 10% level

APPENDIX E

CONCEPTUAL FRAMEWORK

In order to be able to predict the impact of marital disruption on a young woman's labor supply behavior, it is necessary to review the theoretical foundations of labor supply and the literature on the determinants of disruption. A review of labor supply theory permits formulation of hypotheses regarding the impact of the loss of the husband's earnings on the respondent's financial resources and in turn, the intensity of her participation in the labor force. The literature on the determinants of disruption, on the other hand, indicates whether or not married women whose marriages are to disrupt differ significantly with regard to their labor supply and family income characteristics from women whose marriages remain intact.

Pre- and Postdisruption Labor Supply Comparison

Theory of Labor Supply

The theory of labor supply behavior is based upon Lionel Robbins' work in which the supply of labor was analyzed in terms of the demand for leisure. Becker, Lancaster and others have since refined Robbins' work by incorporating the concept of the household as a production unit similar to that of a firm. In this view, market goods and services are depicted as not directly entering the household preference function but rather serving as inputs into the production of commodities (or characteristics) by the household. These commodities,

such as children, in turn yield utility to the family. A second feature of the household production concept is the introduction by Becker of the cost of time as an additional input in production.[1] Therefore, the household is seen as maximizing its welfare (utility) subject to time and goods constraints, where its welfare is a function of commodities produced from a vector of market goods and a vector of quantities of consumption time.[2]

However, as Heckman describes, only in the family where one spouse does no market work is this time constraint, as defined by Becker, binding on the household's production activities. Becker assumes that the household has positive values to all its decision variables and that the time constraint is, therefore, essentially redundant. Where one spouse does no market work, the market wage understates the actual

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[1]See Lionel Robbins, "On the Elasticity of Demand for Income in Terms of Effort," Economica 10 (June 1930): 123-29; and Gary Becker, "A Theory of the Allocation of Time," Economic Journal 75 (September 1965): 493-517.

[2]Mincer in his early work on the subject of labor supply points out that the traditional dichotomy between work and leisure is not exhaustive since there is a broad category of work in the home, "non-market" work, that receives no remuneration. However, this trichotomous version of the allocation of time by the household is ignored by Becker in his general formulation. See Reuben Gronau, "Leisure, Home Production and Work - The Theory of the Allocation of Time Revisited," Journal of Political Economy 85, no. 6 (December 1977): 1099-124, for a formalization of the trichotomy of market work, home work and leisure and Jacob Mincer, "Labor Force Participation of Married Women."

"shadow" price of the spouse's non-market time and therefore, only in this case, is the household doubly constrained (as Becker describes) by both time and budget considerations.[3]

The theoretical model for this study is based on this evolving formulation of a model which can accurately predict labor supply behavior. The formal presentation of the conceptual framework for this study will use a family labor supply model where the family consists of a husband and wife, m and f, who are potential participants in the labor market. It then follows that there is a trade-off between the nonmarket time of each spouse, L_m and L_f, and a composite bundle of goods and services, X. L_m and L_f include components of time spent in both leisure and home production. The family maximizes its utility

$$U = U(L_m, L_f, X)^4 \qquad (1)$$

subject to a budget constraint

$$pX = w_m H_m + w_f H_f + Y_n \qquad (2)$$

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[3]See J.J. Heckman, "Three Essays," pp. 1-2.

[4]It should be noted that maxmizing utility is equivalent to maximizing household production as follows:

$$U = u(Z_1 \ldots Z_n)$$

where Z_i = quantity of the commodity produced by the household

subject to the production constraint:

$$Z_i = f(L_m, L_f, X,)$$

In both maximization models, there is an assumption that the family pools its resources, i.e., there is a single composite X for the family.

and a time constraint

$$H_m + L_m = T \text{ and } H_f + L_f = T \tag{3}$$

where

p = price of goods

X = composite bundle of goods and services

w_m = husband's net wage rate (net of taxes)

w_f = wife's net wage rate

Y_n = nonlabor income

T = total time available

H_m = husband's hours worked

H_f = wife's hours worked

L_m = husband's nonmarket hours

L_f = wife's nonmarket hours.

The Lagrangian equation for constrained utility maximization, where X is the numeraire, is then as follows:

$$V = u(X,L_m,L_f) + \lambda[w_m H_m + w_f H_f + Y_n - X] + \mu[T - H_m - L_m] + \gamma(T - H_f - L_f)^5 \tag{4}$$

where λ = marginal utility of income

μ = marginal utility of time of the husband

γ = marginal utility of time of the wife.

---

[5] These budget and time constraints can be converted into a single "full income" constraint,

$$w_m L_m + w_f L_f + pX = (w_m + w_f)\,T + Y_n \equiv S$$

where S = full income

The potential "full income" of the family (nonwage income plus the money income that could be achieved if all the time available was devoted to market work) is thus spent either directly on goods and services or through the foregoing of money income by spending time on consumption activities. See Becker, "Allocation of Time."

The Kuhn-Tucker conditions for a utility maximum become:

$$\frac{\partial V}{\partial X} = \frac{\partial U}{\partial X} - \lambda \leq 0 \tag{5}$$

$$\frac{\partial V}{\partial L_m} = \frac{\partial U}{\partial L_m} - \mu \leq 0 \tag{6}$$

$$\frac{\partial V}{\partial L_f} = \frac{\partial U}{\partial L_f} - \gamma \leq 0 \tag{7}$$

$$\frac{\partial V}{\partial H_m} = \lambda w_m - \mu \leq 0 \tag{8}$$

$$\frac{\partial V}{\partial H_f} = \lambda w_f - \gamma \leq 0 \tag{9}$$

$$\frac{\partial V}{\partial \lambda} = w_m H_m + w_f H_f + Y_n - X = 0 \tag{10}$$

$$\frac{\partial V}{\partial \mu} = T - H_m - L_m = 0 \tag{11}$$

$$\frac{\partial V}{\partial \gamma} = T - H_f - L_f = 0 \tag{12}$$

If both spouses combine market work and consumption time, the above first-order conditions hold as strict equalities. If, however, the maximization process obtains a corner solution, i.e. where the husband or wife is not in the labor force, then (8) or (9) will hold as an inequality and either

$$w_m < \frac{\mu}{\lambda} = w_{s_m}$$

$$\text{or } w_f < \frac{\gamma}{\lambda} = w_{s_f} \tag{13}$$

where μ/λ and γ/λ are defined as the shadow wage rates for the husband and wife, respectively.[6] These shadow wage rates represent the monetary value of consumption time, where there is no market work.

Assuming that an interior solution does exist, the Slutsky equations derived from the second order conditions can be written as:

$$\frac{\partial H_i}{\partial w_j} = \frac{\partial H_i}{\partial w_j}\Big|_{\bar{U}} + H_j\left(\frac{\partial H_i}{\partial Y_n}\right) \text{ where } i = m, f \text{ and } j = m, f \qquad (14)$$

From economic theory own substitution effects are positive

$$\frac{\partial H_i}{\partial w_i}\Big|_{\bar{U}} > 0 \text{ where } i = m \text{ or } f \qquad (15)$$

If nonmarket time is not an inferior good, income effects are negative,[7]

$$\frac{\partial H_i}{\partial Y_n} < 0 \text{ where } i = m \text{ or } f \qquad (16)$$

and cross substitution effects are equal,

$$\frac{\partial H_i}{\partial w_j}\Big|_{\bar{U}} = \frac{\partial H_j}{\partial w_i}\Big|_{\bar{U}} \quad \text{where } i = m \text{ or } f. \qquad (17)$$

---

[6] If a full income constraint is used, the shadow wage rate is defined as

$$w_{s_i} = \frac{\frac{\partial U}{\partial L_i}\Big|_{L_i}}{\lambda} = T \qquad \text{where } i = m \text{ or } f$$

λ = marginal utility of full income

As Gronau points out, the market wage rate may fall short of the shadow price of time either due to the individual's reluctance to work outside the home or because of differences in productivity between market and nonmarket work. See Gronau, "Leisure, Home Production, and Work", p. 106 . Becker discusses this latter strategy of role specialization with one spouse remaining in the home as promoting marital stability (see p. 31 of this chapter).

[7] See Michael Keeley, "The Economics of Labor Supply," pp. II: 7-10, for a detailed discussion of the validity of this assumption with regard to nonmarket work as distinct from leisure.

According to this framework, the labor supply choices for the married woman are between nonmarket activities and market work. Changes in family income as well as changes in the woman's expected wage rate will act to change the allocation of her time between these activities. Increased family income will decrease the woman's total work hours, assuming relevant commodity prices are fixed. On the other hand, an increase in her wage rate, holding family income constant, will increase the opportunity cost of her home time. Depending on the ease of securing substitutes, as through the use of housekeepers or domestics, the expectation would be that the woman will increase her market work and reduce her non-market hours. The extent to which changes in income or wages alter the distribution of hours spent between home and market work, will depend upon the existence of substitutes for the woman's non-market time. For example, women with small children may be almost totally unresponsive to wage or income changes since they perceive no acceptable substitutes for their home work.

After the marital disruption has occurred, the labor supply model for a disrupted woman takes the following form:

$$U = u(X_2, L_{2f}) \tag{18}$$

subject to a budget constraint

$$pX_2 = w_{2f}H_{2f} + Y_{2n} \tag{19}$$

and the time constraint

$$H_{2f} + L_{2f} = T \tag{20}$$

The first order conditions (6), (8), and (11) no longer hold and condition (10) is rewritten as

$$\frac{\partial V}{\partial \lambda} = w_{2f}H_{2f} + Y_{2n} - X_2 = 0 \qquad (21)$$

where Y_{2n} = the level of unearned income available to the family in the postdisruption period

H_{2f} = number of hours contributed to the market in the postdisruption period

and w_{2f} = net wage rate in the postdisruption period.

Assuming an interior solution exists (the woman contributes some hours to the labor force), the derived Slutsky condition in the postdisruption period is

$$\frac{\partial H_{2f}}{\partial w_{2f}} = \frac{\partial H_{2f}}{\partial w_{2f}}\bigg|_{\bar{U}} + H_{2f}\frac{\partial H_{2f}}{\partial Y_{2n}} \qquad (22)$$

where cross substitution effects are absent.[8]

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[8] If there are other wage earners in the household there will be cross substitution effects. In this case, the maximizing conditions would be equivalent to the case where the husband was in the household, i.e.

$$U = u(X_2, L_{2f}, L_{2o})$$

where o = other family member

and the budget constraints and time constraints would be as follows:

$$pX_2 = w_{2f}H_{2f} + w_{2o}H_{2o} + Y_{2n}$$

and $H_{2f} + L_{2f} = T$

$H_{2o} + L_{2o} = T$

If the disrupted woman does not contribute any hours to the labor force, equation (9) will hold as an inequality and

$$w_{2f} < \gamma/\lambda = \text{disrupted woman's shadow wage rate.} \qquad (23)$$

Because the young woman's market wage is not expected to change to any appreciable degree over the period that the disruption takes place, the key element in determining the extent of the impact of the separation or divorce on labor supply will be the alteration in the financial resources available to the family. There are several means by which the maritally disrupted woman may seek to compensate for the loss of the spouse's earnings to the household. These include the receipt of alimony or child support, financial support through extended family arrangements and public assistance payments.

Alimony and child support payments are viewed as a means of compensating the maritally disrupted woman, particularly one who has children, for the loss of her husband's earnings. Theoretically, one would expect to find a close relationship between the husband's ability to pay and the size of the payment. Women with children whose husband's earnings were high the period immediately preceding the disruption should be the most likely recipients of such assistance.[9]

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[9] Ross and Sawhill point out in their book, Time of Transition, that the flow of such private transfers is somewhat smaller than is commonly believed. Data from the General Accounting Office in 1974 also indicate little relationship between the husband's earnings and either the amount of payment agreed to or his compliance with the law, see pp. 175-76.

Income from other family members either through direct gifts or extended family living arrangements can also serve as a substitute for the husband's earnings.

The receipt of such nonwage income will have only an income effect. Since the income effect is assumed to be negative, this increase in financial resources will reduce the amount of labor the divorced or separated woman would supply to the market as compared with what she would offer if she did not have such financial resources available to her.

Hoffman makes the suggestion, on the basis of work with the Panel Survey on Income Dynamics, that welfare and alimony/child support may operate as crude substitutes. Where alimony/child support is not adequately provided, public assistance, particularly Aid to Families with Dependent Children (AFDC), becomes a necessary alternative.[10] Although certain U.S. Supreme Court rulings have made it somewhat easier now than formerly for intact families to receive AFDC, female headedness continues to be an important criterion for the receipt of benefits. Acceptance rates for AFDC have been rising over the last decade and a half; therefore, if a woman is a head of a household with children and has little outside financial resources, the likelihood that she will be receiving AFDC benefits is high.

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[10]Saul Hoffman, "Marital Instability and Women's Economic Status," Demography 14, no. 1 (February 1977): 67-76.

The benefits, B, that a family (assuming there is a female head) receives under a public assistance program are usually represented as

$$B = G - t(w_f H_f + Y_n) \tag{24}$$

where G = minimum guaranteed income

t = tax rate imposed under the public assistance plan with the assumption made that both earned and unearned income is subject to a tax which reduces the level of benefits as income rises. The benefit received becomes zero at the point where total family income is equal to G/t, often referred to as the "break-even" point. The postdisruption budget constraint for the household can then be generalized to include the receipt of public assistance benefits in the following manner:

$$pX_2 = w_{2f}H_{2f}(1 - t) + Y_{2n}(1 - t) + G \text{ if } w_{2f}H_{2f} + Y_{2n} < G/t \tag{25}$$

and $$pX_2 = w_{2f}H_{2f} + Y_{2n} \text{ if } w_{2f}H_{2f} + Y_{2n} \geq G/t$$

Under this more general formulation, where X_2 is the numeraire and positive benefits are being received, the Kuhn-Tucker conditions for constrained utility maximization are:

$$\frac{\partial V}{\partial X_2} = \frac{\partial U}{\partial X_2} - \lambda \leq 0 \tag{26}$$

$$\frac{\partial V}{\partial L_{2f}} = \frac{\partial U}{\partial L_{2f}} - \gamma \leq 0 \tag{27}$$

$$\frac{\partial V}{\partial H_{2f}} = \lambda w_{2f}(1 - t) - \gamma \leq 0 \tag{28}$$

$$\frac{\partial V}{\partial \lambda} = w_{2f}H_{2f}(1 - t) + Y_{2n}(1 - t) + G - X_2 = 0 \tag{29}$$

$$\frac{\partial V}{\partial \lambda} = T - H_{2f} - L_{2f} = 0 \tag{30}$$

and the Slutsky condition is:

$$\frac{\partial H_{2f}}{\partial w_{2f}}(1-t) = \frac{\partial H_{2f}}{\partial W_{2f}}(1-t)\Big|_{\bar{U}} + H_{2f}\frac{\partial H_{2f}}{\partial Y_{2n}}(1-t).^{11} \quad (31)$$

If the female head is in the labor force, these conditions hold as strict equalities. If the woman is not in the labor force, a corner solution is obtained and

$$w_{2f}(1-t) < \frac{\gamma}{\lambda} = w_{s_f}.$$

Since t is negative, i.e., as the hours of market work increase, welfare benefit levels decrease, the receipt of public assistance reduces the value of the market wage that the woman can expect to receive. This implicit tax on market wage decreases the likelihood that a public assistance recipient will enter the labor market or at least will reduce the number of hours that she supplies to the market. In addition, the receipt of a minimum guaranteed benefit level has an income effect further reducing labor supply.[12]

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[11] Again, this formulation of the Slutsky equation assumes no cross substitution effects.

[12] Moffitt points out that there are several possible analytic difficulties that arise from such a simple modelling of the effects of transfer payments on household production. In his paper, "On Modelling the Work Disincentives of Tax and Transfer Programs," he discusses three major problems, distinguished as nonlinearity, nondifferentiability and nonconvexity of the budget constraint. The estimation of labor supply effects assumes a linear budget constraint. With the addition of a tax or transfer variable, such an assumption is only realistic in the case where the program has a constant tax rate over all ranges of earnings. If t is constant, then w_f in equation (2) can be replaced by $w_f(1-t)$. Since t is constant, changes in the net wage rate are analytically equivalent to changes in the wage rate before the tax was introduced.

The problems stem from the fact that tax and transfer programs do not generally have constant tax rates. Rather, depending on the

Hypotheses

The changes in the mix of financial resources available to the family as a result of a marital disruption can now be related to the labor supply behavior of the respondent. Controlling for background characteristics, a graphical representation of her labor supply decision both before (period 1) and after (period 2) the marital disruption is shown in Figure 5.[13]

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jurisdiction, tax rates may increase with earnings, resulting in a nonlinear budget constraint. In addition (as was discussed in the text) transfer programs have at least one kink at the break-even point, the point at which the subsidy or benefit goes to zero. Unless the segment of the budget line above the kink is ignored, the budget constraint remains undifferentiable. Finally, most transfer programs generate nonconvex budget lines. Low levels of earnings are taxed at high rates (often approaching 100 percent) up to the break-even point; above this point, earnings are taxed according to initially lower progressive income tax rates.

See Robert A. Moffitt, "On Modelling the Work Disincentives of Tax and Transfer Programs," mimeographed, (Princeton, N.J.: Mathematica Policy Research, 1976), pp. 1-19, for a more detailed discussion of these problems.

[13]This graphical representation makes the following assumptions:

1. No complementarity is allowed between the labor supply of the wife and that of her husband. In period 1, the woman takes her husband's earnings as fixed, $\bar{W}_{1m}\bar{H}_{1m}$, in the budget constraint.
2. The only time in period 1 when the family may receive welfare benefits is when the husband is unemployed. Therefore, husband's wages and welfare benefits are viewed as perfect substitutes in period 1 and public assistance benefits are assumed not to enter the budget constraint.
3. There is no man in the household in the postdisruption period. The situation, however, does exist where the woman remarries very quickly such that there is really no time where she formulates her work-leisure choice without taking into account a spouse's income. However, such immediate remarriers will be excluded from the sample in the empirical analysis.
4. The wage rate for both husbands and wives is invariant to the hours worked.
5. No account is taken of explicit tax rates on income.

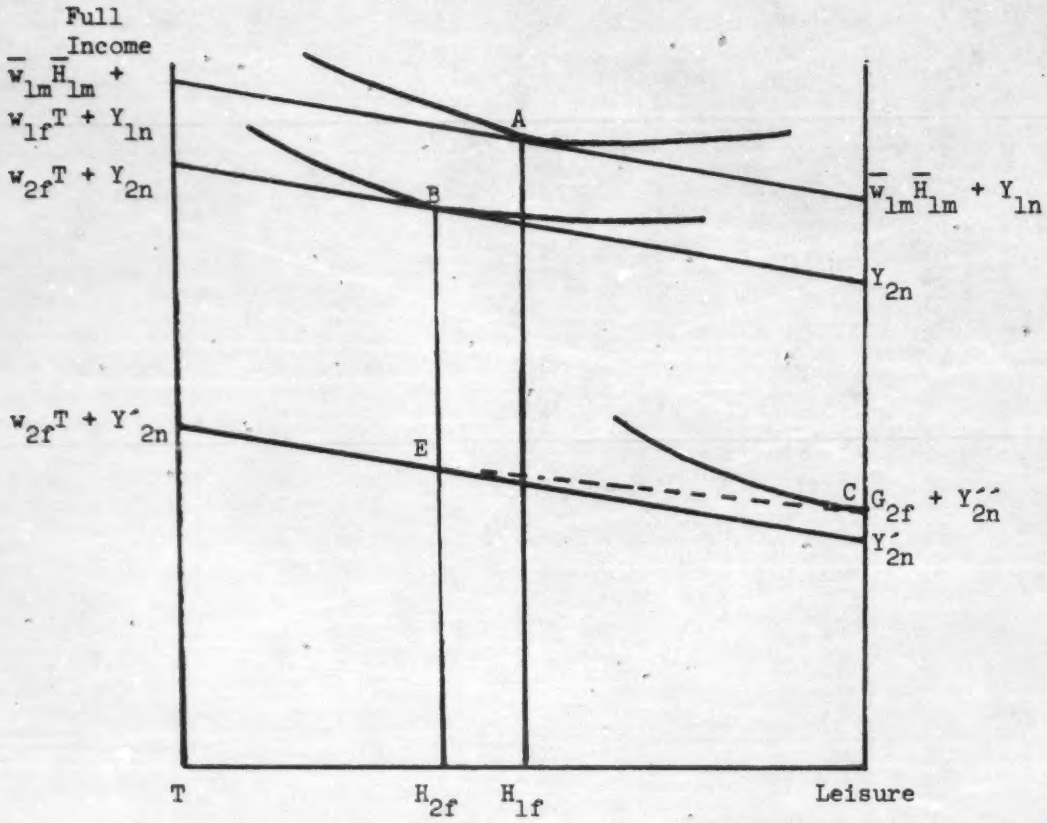

Figure 5

Labor Supply Curves

m = husband
f = wife
n = household
1 = 1st period (before disruption)
2 = 2nd period (after disruption)
T = total time available
w = wage
H = hours of work
G = guaranteed minimum benefit
Y = alimony/child support (or other private transfer payment)
t = implicit tax rate imposed by the receipt of public assistance

In the predisruption period, equilibrium point A represents the intersection of the expected wage of the respondent (the slope of the household's preference function). At the intersection point depicted, the respondent supplies H_{1f} hours to the labor market. However, if there is no intersection point, i.e., where $w_{1f} < \frac{\gamma_{1f}}{\lambda_{1f}}$, then the woman supplies no labor.

In the postdisruption period, if no welfare payments are received, no cross substitution effects exist, and the household preference function remains the same as in the predisruption period, the loss of the husband's earnings will be felt only as a negative income effect on labor supply.[14] The direction of the impact of this loss on the respondent's labor supply will depend on whether Y_{2n}, which includes nonlabor income sources such as alimony/child support or wage income from other family members, is greater or less than the sum of the husband's earned and unearned income in the first period. Figure 1 is drawn to reflect an assumed net reduction in family income ($Y_{2n} < \bar{w}_{1m}\bar{H}_{1m} + Y_{1n}$); hence, the disrupted woman supplies H_{2f} hours to the labor market ($H_{2f} < H_{1f}$). If the household preference function does not remain constant between the two periods, then the outcome in terms of the change in labor supplied to the market cannot be determined. An exact specification of how the household's utility structure is altered would have to be known in order to derive an equilibrium point.

[14] This hypothesized result ignores the existence of a substitution effect generated by the change in marginal income tax rates due to the departure of the husband from the household. For a discussion of the impact of U.S. tax laws on the labor supply of married women see Harvey S. Rosen, "Tax Illusion and the Labor Supply of Married Women," The Review of Economics and Statistics 58 (May 1976): 167-72.

The receipt of public assistance, assuming there is an implicit tax on earnings ($t > 0$) will have both an income and a price (substitution) effect on labor supply. The receipt of a guaranteed level of benefits will act to reduce participation in the labor force through a negative income effect. In addition, the expected wage rate (the wage that the woman could expect to receive if she entered the labor force) will be altered by the tax on earnings, such that $w_{2f}(1 - t) < w_{2f}$. In the graphical representation, the assumption is made that if a woman whose income level makes her eligible for welfare elected not to receive public assistance, she would receive Y'_{2n} income through financial assistance from family members and/or through other private transfer payments. With public assistance receipt and no work, as at point C, she could be receiving G_{2f}, welfare benefits, plus some income Y''_{2f}.[15]

If she elects to receive public assistance and also to participate in the labor force, the slope of the budget constraint is decreased since her expected wage rate is now $w_{2f}(1 - t)$. If she continues to increase her hours of work, at the break-even point, E, she becomes indifferent between the receipt or nonreceipt of welfare, i.e.,

$$w_{2f}(1 - t)H_{2f} + G_{2f} + Y''_{2n} = w_{2f}H_{2f} + Y'_{2n}.$$

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[15] Since welfare benefit levels are reduced with the receipt of any type of nonlabor income, the assumption is that she will be forced to reduce the amount of nonlabor income she would have received without assistance, Y'_{2n}. Nevertheless, welfare benefits are assumed to put her at a higher budget line than would have been possible without the receipt of such benefits.

A Comparison of the Labor Supply Behavior of Disrupting Women and Maritally Stable Women

The Determinants of Disruption Literature

As was discussed in the introductory chapter, the focus of this research is on the net impact of marital disruption on a young woman's labor supply behavior. It is, therefore, important to consider whether those married women who subsequently disrupt have certain economic characteristics, such as greater work experience or lower family income, which distinguish them from women whose marriages remain stable. The consequences of such a finding are to increase the likelihood that (1), there is some simultaneous relationship between labor supply behavior and marital status and (2), there has been some truncation of the dependent variable, since low family income will increase labor supply. Such results do not destroy the value of the labor supply estimates obtained from the pre- and postdisruption periods but do serve as a potential source of bias which must at least be discussed.

To explore the possibility that such sources of bias exist in the labor supply models to be estimated requires a survey of the rapidly growing literature on the determinants of marital disruption. Much of the early literature consisted of work done by sociologists and psychologists who were most concerned with the effects of psychological and demographic factors on marital satisfaction. The factors studied included age at marriage, intergenerational transmission of instability, the presence of children, illegitimacy, etc.[16]

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[16] See George Levinger, "A Social Psychological Perspective on Marital Dissolution," The Journal of Social Issues 32 (Winter 1976): 21-48, for an excellent survey of this early literature. The early literature establishes the important fact that marital stability is not necessarily

In recent years, research has become increasingly interdisciplinary in nature with economists taking an active interest in the field. Since the purpose of this section is to examine the causal relationship between the respondent's labor supply and marital disruption, emphasis will be placed on the literature examining economic factors which serve either as constraints on or incentives for marital dissolution. Ross and Sawhill term those economic factors which tend to "cement" a marriage by encouraging a wife's dependence on her husband as "income" effects. On the other hand, factors which promote a feeling of economic independence in a woman are termed "independence" effects.[17]

Goode in 1962 first introduced the concept of an "income" effect with his finding that divorce was more common among the lower classes, whether social status was classified by the husband's education or occupation or by family income.[18] Cutright further refined this idea

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indicative of a happy marriage, since stability can be related to a lack of available alternatives to the marriage. Therefore, social and economic constraints can hold together marriages which appear to be devoid of positive marital satisfaction. It has been clearly impossible for researchers to model the reasons for the decline in marital satisfaction in many marriages. Instead they have been forced to confine themselves to an examination of those characteristics which appear to be significant precipitators of the marital disruption itself.

[17]Although this study takes the female perspective due to the nature of the sample universe, marriage is in fact depicted as an exchange process. Ross and Sawhill cite the analogy of the two country case in international trade where the distribution of gains between the two countries will depend on their bargaining power and resource endowments. If perfect symmetry could be assumed, then the independence effect for the wife would be the income effect for the husband and likewise, the income effect for the wife would be the independence effect for the husband. For this reason, it is important to discuss the available literature on both these effects. See Heather Ross and Isabel Sawhill, Time of Transition, pp. 42-47.

[18]William J. Goode, "Marital Satisfaction and Instability: A Cross-Cultural Analysis of Divorce Rates," International Social Service Journal 14 (1962): 507-26.

by empirically establishing that when controls were put on family income, the education and the occupation of the husband had no direct effect on marital stability.

There has been no generally accepted theoretical basis for such an "income" effect. Cutright mentions two possible "models" to explain the empirical relationship.

(1) "Role satisfaction" model: High income couples tend to have high levels of marital satisfaction because the high income is an indicator of the success of the husband in his role as breadwinner. This positive evaluation by the couple tends to promote marital stability.

(2) "Constraint" model: High income leads to large asset accumulation in the form of savings, investments, home ownership, etc. The lowering of the high consumption levels and the difficulty of distributing the assets tends to discourage marital dissolution.[19]

However, as Cutright seeks to explain the fact that the increasing shift out of poverty by nonwhite families has not been accompanied by a rise in marital stability among nonwhites, he speculates that perhaps it is not the absolute level of family income which functions as the chief determinant of marital stability. Rather the "relative consumption position of the couple in its reference group" is the "root of economic dissatisfactions which undermine the marriage."[20] Recent

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[19] Phillips Cutright, "Income and Family Events: Marital Stability," Journal of Marriage and the Family (May 1971): 291-305.

[20] Ibid, p. 303.

research on disruption probabilities using multivariate analysis has generally confirmed that it is the stability of income sources, rather than the absolute level which affects disruption probabilities.[21]

The theoretical basis for the existence of an "independence" effect, on the other hand, has generally been associated with Becker's theory of marriage. Becker argues that, although the sociological literature suggests that complementarity between men and women is the major source of the gain from marriages, the concept of "complementarity" has been vaguely defined. He refines this concept by specifying that a negative correlation between the wage rate of the husband and that of the wife maximizes total output because the gains from the division of labor within the household are maximized. The high wage spouse spends more time in market work and the low wage spouse, in household production. A corollary of this point is that marital dissolution will be more likely in the case where the gains from this role specialization are small either because there is little demand for home production services (for example, where there are no children) or where the wage rate of the wife is competitive with that of her husband.[22] Given this framework, Ross and Sawhill hypothesize that,

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[21] Ross and Sawhill, Time of Transition, pp. 59-60; Andrew Cherlin, "Social and Economic Determinants of Marital Separation, Ph.D. dissertation, University of California, 1976; Frank Mott and Sylvia Moore, "Marital Disruption: Causes and Consequences," in Mott, et. al., Years for Decision, vol. 4, (Columbus, Ohio: Center for Human Resource Research, 1977), p. 217.

[22] Gary Becker, "A Theory of Marriage: Part I," Journal of Political Economy 8 (July/August 1973): 828.

where women have other means of support in the form either of own earnings or access to welfare, they are less constrained to remain in a marriage where there is little marital satisfaction, i.e., the "independence" effect.[23]

In empirical work seeking to discern whether or not such an effect exists, there is general confirmation of a positive and significant association between the level of the wife's earnings, proxying for an "independence" effect, and the probability of disruption.[24] Alternatively, Cherlin attempts to test directly Becker's hypothesis of marital instability where there are few gains to specialization by incorporating the ratio of the wife's actual wage (or expected wage, if not in the labor force) to the wage of her husband as a variable to explain the probability of marital disruption. His results confirm such an effect.[25]

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[23] Ross and Sawhill do suggest other interpretations for the positive association between a wife's earnings and the probability of disruption. Rather than being an independence effect, the relationship may be explained by the fact that wives seek employment in anticipation of a divorce. Or alternatively, the time pressure engendered by having two wage earners in the family may create marital strain. See Ross and Sawhill, Time of Transition, pp. 57-59.

[24] Ross and Sawhill, Time of Transition, pp. 57-59; Shirley B. Johnson, "The Impact of Women's Liberation on Marriage: Divorce and Family Life Style," in Sex Discrimination and the Division of Labor, Cynthia Lloyd (Ed.) (New York: Columbia University Press, 1975), pp. 401-426; Mott and Moore, "Marital Disruption," p. 214.

[25] Andrew Cherlin, "Social and Economic Determinants."

In summary, the available literature supports the existence of an "independence" effect as an incentive for marital dissolution, but finds mixed results with regard to the existence of an "income" effect as a deterrent to such a dissolution. Unexpected alterations in family income due to changes in assets or employment are found to affect disruption probabilities, while absolute income levels are not. The fact that absolute levels of family income have not been generally found in the literature to affect disruption probabilities indicates that truncation of the dependent variable will not be an important source of bias in the estimated predisruption labor supply models.[26] On the other hand, the general confirmation of the existence of an independence effect indicates there is a possibility of a simultaneous relationship between labor supply and marital status.

Empirical Methodology

Labor supply theory (see Appendix E) implies that the wife's demand for nonmarket time in the postdisruption period can be written as:

$$L_{2f} = u_{2f}\ (w_{2f},\ p,\ Y_{2n}) \qquad (1)$$

[26] Assuming symmetrical effects between spouses, this result also points out that the "independence" effect of the husband is much weaker than that of his wife. One the other hand, the "income" effect of the husband (the independence effect of the wife), hypothesized to be a "cementing" factor in a marriage, is strongly and positively related to marital stability.

Letting X be the numeraire and noting that $H_{2f} = T - L_{2f}$, this equation can be written as a supply of labor equation

$$H_{2f} = H_{2f}(w_{2f}, Y_{2n}) \qquad (2)$$

where

H_{2f} = annual hours of work of the wife in the postdisruption period

w_{2f} = wife's postdisruption wage rate

Y_{2n} = nonlabor income available to the household after disruption.[27]

Linearizing the equation, (2) becomes

$$H_{2f} = \alpha_{20} + \alpha_{21}w_{2f} + \alpha_{22}Y_{2n} + E_2 \qquad (3)$$

where E_2 = residual effect

The uncompensated wage effect, $\frac{\partial H_{2f}}{\partial w_{2f}}$, is given by α_{21} and the income effect, $\frac{\partial H_{2f}}{\partial Y_{2n}}$, by α_{22}. The compensated own wage (substitution) effect can be derived

$$\left.\frac{\partial H_{2f}}{\partial w_{2n}}\right|_{\bar{U}} = \frac{\partial H_{2f}}{\partial w_{2f}} - \bar{H}_{2f}\frac{\partial H_{2f}}{\partial Y_{2n}} \qquad \text{or} \qquad (4)$$

$$= \alpha_{21} - \bar{H}_{2f}\alpha_{22}.^{28}$$

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[27] Because the earnings of other wage earners (if any) in the household are assumed to be exogenous to the respondent's labor market behavior, Y_{2n} includes the earnings of other family members, $w_{20}H_{20}$. Therefore, cross wage effects, $\frac{\partial H_{20}}{\partial w_{2f}}$, $\frac{\partial H_{2f}}{\partial w_{20}}$, do not exist.

[28] This approach was initially used by Mincer in 1962 and a variant is used by Kosters in 1969. See Mincer, "Labor Force Participation of Married Women," in Aspects of Labor Economics, H. Gregg Lewis (Ed.), National Bureau Conference Series No. 14 (Princeton, New Jersey: Princeton University Press, 1962), pp. 63-105; Marvin

In order to assure that income and uncompensated wage effects are similarly defined in the predisruption labor supply models, certain simplifying assumptions must be made. The husband's work hours, H_{1m}, are assumed to be fixed, i.e., they are invariant to the amount of non-labor income available to the household, Y_{1n}, and to the wife's wage rate, w_{1f}.[29] The predisruption labor supply equation then takes the following form:

$$H_{1f} = \alpha_{10} + \alpha_{11}w_{1f} + \alpha_{12}(w_{1m}H_{1m} + Y_{1n}) + E_1 \quad (5)$$

[30]

The income and uncompensated wage effects are defined as α_{12} and α_{11}, respectively.[31]

Kosters, "Effects of an Income Tax on Labor Supply," in Taxation of Income Capital, edited by Arnold C. Harberger and M.J. Bailey (Washington, D.C.: The Brookings Institution, 1969), pp. 301-324.

[29]By making such an assumption, one ignores the possibility that the hours of the husband, H_m, is a simultaneously determined endogenous variable. Kniesner finds that the gross (uncompensated) effect of a change in the wage of the husband will vary according to whether or not the wife performs market work. See Thomas J. Kniesner, "An Indirect Test of Complementarity in a Family Labor Supply Model," Econometrica 44, no. 4 (July 1976): 651-69.

[30]As in the postdisruption estimating model, Y_{1n} is assumed to include the earnings of family members other than the husband and wife, if any.

[31]Michael Keeley describes the change in the income and gross wage effects when consideration is given to the endogeneity of the husband's work hours in equation (5) (excluding the case of more than two wage earners). If $H_{1f} = H_{1f}(Y_{1n}, w_{1f}, w_{1m})$, then the income effect would be defined as

$$\frac{\partial H_{1f}}{\partial Y_{1n}} = \alpha_{12}\left(w_{1m}\frac{\partial H_{1m}}{\partial Y_{1n}} + 1\right)$$

and the gross wage effect as

$$\frac{\partial H_{1f}}{\partial w_{1f}} = \alpha_{11} + \alpha_{12}w_{1m}\frac{\partial H_{1m}}{\partial w_{1f}}$$

See Keeley, "Economics of Labor Supply: A Critical Review," Mimeographed, Stanford Research Institute, 1977, pp. II-13, II-14.

Comparability of income and substitution effects is not a problem when multivariate comparisons are made of the predisruption labor supply behavior of future disruptees with a sample of maritally stable women, since in both cases the spouse remains in the household. Therefore, the restricting assumption of the exogeneity of the husband's work hours to his wife's labor supply is not necessary in order to be able to test for coefficient differences.

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The Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented research unit based in the College of Administrative Science of The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems associated with human resource development, conservation and utilization. The personnel include approximately twenty senior staff members drawn from the disciplines of economics, education, health sciences, industrial relations, management science, psychology, public administration, social work and sociology. This multidisciplinary team is supported by approximately 50 graduate research associates, full-time research assistants, computer programmers and other personnel.

The Center has acquired pre-eminence in the fields of labor market research and manpower planning. The National Longitudinal Surveys of Labor Force Behavior have been the responsibility of the Center since 1965 under continuing support from the United States Department of Labor. Staff have been called upon for human resource planning assistance throughout the world with major studies conducted in Bolivia, Ecuador and Venezuela, and recently the National Science Foundation requested a review of the state of the art in human resource planning. Senior personnel are also engaged in several other areas of research including collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs and the projection of health education and facility needs.

The Center for Human Resource Research has received over one million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, and Health, Education and Welfare; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; and the George Gund Foundation. The breadth of research interests may be seen by examining a few of the present projects.

The largest of the current projects is the National Longitudinal Surveys of Labor Force Behavior. This project involves repeated interviews over a fifteen year period with four groups of the United State population; older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the Center is responsible for data anlysis. To date dozens of research monographs and special reports have been prepared by the staff. Responsibilities also include the preparation and distribution of data tapes for public use. Beginning in 1979, an additional cohort of 12,000 young men and women between the ages of 14 and 21 will be studied on an annual basis for the following five years. Again the Center will provide analysis and public use tapes for this cohort.

The Quality of Working Life Project is another ongoing study operated in conjunction with the cities of Springfield and Columbus, in an attempt to improve both the productivity and the meaningfulness of work for public employees in these two municipalities. Center staff serve as third party advisors, as well as researchers, to explore new techniques for attaining management-worker cooperation.

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A third area of research in which the Center has been active is manpower planning both in the U.S. and in developing countries. A current project for the Ohio Advisory Council for Vocational Education seeks to identify and inventory the highly fragmented institutions and agencies responsible for supplying vocational and technical training in Ohio. These data will subsequently be integrated into a comprehensive model for forecasting the State's supply of vocational and technical skills.

Another focus of research is collective bargaining. In a project for the U.S. Department of Labor, staff members are evaluating several current experiments for "expedited grievance procedures," working with unions and management in a variety of industries. The procedural adequacies, safeguards for due process, cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recent papers have been written for the Joint Economic Committee of Congress, The National Commission for Employment and Unemployment Statistics, The National Commission for Manpower Policy, The White House Conference on the Family, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 9,000 titles which includes a wide range of reference works and current periodicals. Also provided are computer facilities linked with those of the University and staffed by approximately a dozen computer programmers. They serve the needs of in-house researchers and users of the National Longitudinal Survey tapes.

For more information on specific Center activities or for a copy of the Publications List, write: Director, Center for Human Resource Research, Suite 585, 1375 Perry Street, Columbus, Ohio 43201.